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GUNSHOT WOUNDS OF THE PRESENT WAR

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THE variety of wounds and other surgical conditions presenting at a military hospital are numerous and in many cases of considerable interest. A classification of wounds with regard to the nature of the missile causing such is, in the experience of this hospital, in order of frequency the following: (1) Shrapnel, (2) Shell fragments, (3) Bullets—rifle and machine gun, (4) Hand grenades and bombs, (5) Bayonet, (6) Revolver bullets.

1. Shrapnel Wounds

These were the commonest class of wounds by far presenting for treatment during the first year of the war; the explanation of which is the fact that the present war is what might be termed a "war of big guns", positions being won or lost chiefly by the efficiency of large gun fire on the part of either of the combatants in demolishing the defences and killing or wounding the occupants. The bursting of a well-aimed shell will cause more damage to life and property than many rifle bullets. In bursting over a trench occupied by troops it will kill or wound many men who could never be reached by the direct fire from a rifle.

The missiles being of many different sizes and shapes and travelling at low velocity when coming in contact with the body, produce wounds of different appearances. A sharp piece of steel may cut its way right through the tissues, while on the other hand a large, rough, jagged piece will cause extensive laceration and contusion—besides carrying with it into the deeper parts, pieces of clothing, dirt, etc., and so causing infection, which is a constant

condition in all wounds of this class. When pieces of clothing enter the tissues there is a particularly foul-smelling discharge from the wound simulating that found in B. coli infection and no doubt due to the presence of germs of this group. The discharge is of a reddish brown colour and watery, while the surrounding tissues present a gangrenous appearance. It is in this class of wounds, when not very deep, that excision of the lacerated tissues renders the best results. The pieces of shrapnel, which usually have a low velocity, are generally found lodged in the tissues sometimes just beneath the skin, while others may penetrate to the bone where the resistance is such as to stop further progress. On account of the extensive laceration and contusion of the tissues, also the closing of the muscles over the wounded area, these wounds, when extensive, are very difficult to treat, on account of the difficulty of gaining access to all the infected parts, hence there is a great tendency to the formation of isolated pus pockets unless thorough drainage is established. Hæmatomata are not uncommon in shrapnel wounds.

2. High Explosive Shell Fragments

Although wounds from shrapnel were more frequent during the first year of the war, those of high explosive shells now equal or surpass them. Shrapnel wounds do not manifest such a destructive nature as those from the high explosive shells, where we often find a whole limb or the head completely separated from the body, or where the whole body is blown to pieces. This is the most distressing class of wounds to deal with and contributes largely to the number of fatalities in the field.

Infection is always present and owing to its great extent and the widespread destruction of the tissues and important vessels and nerves, a limb often has to be sacrificed to save life.

On account of the size of the missile and its velocity the destruction of the parts often extends far beyond the visible lacerated and contused tissues, as evidenced by the extensive deep sloughs which are common accompaniments of such wounds, simulating that of a deep electric burn.

3. Bullet Wounds

In the South African war this class of wounds would precede in order that of shrapnel; but the present war differs in many respects from those of previous years—the commoner occurrence of shrapnel, as compared with bullet wounds, being marked.

To-day we are dealing with large bodies of troops drawn up in opposing positions over short distances and both being well "dug in" and protected from direct rifle fire by substantial parapets and trenches which can only be reached by the indirect fire of artillery, hand grenades, and bombs, or a charge on the part of one side or the other. It is in these charges that most bullet wounds are inflicted and the majority of these by the rapid-firing machine guns. "Sniping" is a practice which contributes many casualties to this class. The difference in size, shape, weight and velocity of the bullets used by the different nations in this war does not influence to any extent the nature of the wounds inflicted. The explosive effect is one of the most important factors for consideration, this depending chiefly on the velocity at the time of impact and the density of the tissue involved.

As pointed out by Stevenson in "Wounds in War", the explosive effect which is manifest in the widespread destruction of tissues depends on the transmission of energy from the bullet to solid tissues (bone), hollow organs filled with fluid (stomach, intestines, etc.), very vascular tissues, etc., through which it is transmitted to cellular tissue where the destructive effects are manifest. On account of the frequency of sniping and infantry actions at close ranges a large number of wounds exhibiting the destructive effects of explosive action of bullets have occurred. This is a class of wounds which, owing to the extensive attrition of the tissues, calls for the most careful attention on the part of the surgeon.

The entrance wound, if in the soft parts, may be smaller than the calibre of the bullet, while if situated in firm tissue or where bone is only slightly covered by tissue it is large and irregular. A bullet of high velocity when striking bony structures will often cause extensive undermining of the tissues, but if its course is more superficial a breaking through the tissues from within produces great destruction of overlying structures. Fragments of bone are often carried to a considerable depth along the track of the bullet and may cause serious complications by tearing through large blood vessels, nerves, etc. In the case of a low velocity bullet the wound of entrance is often much larger than the bullet, depending chiefly on the position of the bullet at the time of impact. On account of the centre of gravity of the pointed bullets being situated well back toward the base there is a tendency towards rotation as the velocity diminishes and they may strike the body in a lateral or oblique position and so cause a large wound; or again they

may penetrate the part point end first and then rotate as they pass through the tissues and will often be found with the point directed towards the entrance wound.

In cases where the wound of entrance is situated at a point far removed from the area of lodgement of the bullet, which is found pointing in the direction of the entrance wound, it appears to me that the reversed position is often due to the bullet striking a bone or other hard substance at the termination of its course and being turned about. In one of my cases the entrance wound was situated one and a half inches above and an inch to the left of the sacral prominence and the bullet was found in close proximity to the spine of the left scapula, pointing in the direction of the entrance wound. The tissues between these points, in the course of the bullet, were apparently very slightly damaged as no untoward symptoms developed in this area, which would not likely have been the case if the bullet had made even a half turn in its course.

In the case of a ricochet bullet the cupro-nickel or nickel jacket which surrounds the lead is sometimes torn loose from the lead core, and, entering the body, may cause serious injury by cutting with its sharp, ragged edges, important blood vessels and nerves. On account of their irregular shape these are very often difficult to extract, especially if deeply imbedded. In one case which came under my care the complete jacket, torn up one side, struck the right side of the face at the junction of the ala nasi with the lip and passed through to the left antrum of Highmore, firmly imbedding itself in the posterior wall. It was necessary to make a large opening into the antrum before the missile could be extracted.

Pieces of clothing, foreign matter, etc., are seldom found in uncomplicated bullet wounds, so that the majority of these are treated conservatively in contra-distinction to shrapnel wounds which are practically always septic and treated accordingly. The reversed bullet, i.e., the bullet removed from the shell and replaced point inwards, causes wounds similar to a dum-dum. These were used quite extensively in the early part of the war where the trenches of the combatants were separated by a distance of less than a hundred yards and when rifle fire from the trenches was a commoner practice than at present, and within which distance the velocity maintained was sufficient to cause them to strike the part with base-end foremost, or partially turned. The resulting wound simulated in every particular that produced by a dum-dum bullet. Large numbers of these reversed bullets were found on the German prisoners captured at different times.

4. Hand Grenades and Bombs

These are of many types from the home-made jam-tin bomb to the finely-constructed mechanical device with a well-regulated time fuse or percussion contrivance. The wounds, as a rule, are much less severe than those of shells on account of the limited amount of explosive and the small size of the missiles used. However, in close action very extensive injuries have resulted when a bomb has been dropped in an occupied trench. A great variety of missiles are used in the bombs, such as nails, screws, wire, pieces of broken steel and iron, gramophone needles, etc. These, as a rule, do not penetrate very deeply and so do not cause such extensive or dangerous wounds as do shrapnel or high explosive shells. Infection is the rule in this class of wounds.

5. Bayonet Wounds

Bayonet wounds are extremely rare and are as a rule fairly aseptic. Practically all such wounds treated were accidental.

6. Revolver Bullet Wounds

These are so rare that little consideration may be given them. At close range the bullet causes extensive laceration and bruising of tissues similar to dum-dum bullets and consequently infection is common.

Treatment—Infected Wounds

The keynote for successful treatment is "drainage" and then free lavage to clear away infective organisms, and also the stimulation of the flow of serum into the affected area. Free deep incisions with counter openings in deep seated infections must be practised in all these cases. Drainage tube tracks must be of ample size to admit the tube with ease, otherwise they act in the manner of an obstructive rather than drainage agent. Perforated split rubber tubing, gutta percha tissue, or strips of rubber dam are most commonly employed; gauze very rarely unless surrounded by rubber tissue and kept continually moist. The practice of swabbing the wound with carbolic acid followed by alcohol was discontinued after a very brief experience on the part of a few of the medical officers, and supplanted by the saline submersion, irrigation, or moist dressing method. Although normal saline solution seemed to render excellent results, the solution of Wright cleared the wounds up more promptly.

Previous to carrying out the saline treatment every effort is made to remove all infective material with the use of dissecting forceps, light scrubbing with swabs, or the excision of gangrenous tags of skin and superficial tissue. The parts are then thoroughly bathed with hydrogen peroxide solution.

During the past few months we have been using as a stimulating antiseptic, Dakin's Fluid, which is composed of the following:

Bleaching powder	$12\frac{1}{2}$ grammes
Acid Boric	$12\frac{1}{2}$ "
Water	1 pint

This is allowed to stand for one hour after mixing and the supernatant fluid is used. The results obtained in the treatment of infected wounds with this solution have been remarkably good.

Special attention is devoted to securing for the wounded part absolute rest insofar as this is possible, hence many contrivances have been instituted for supporting comfortably and efficiently the wounded part during the carrying out of dressings or other measures necessitating movement.

Gas gangrene, if of superficial extent, is treated by multiple free incisions, followed by a dressing of gauze which is kept continually soaked with hydrogen peroxide. If the infection is deep and extensive in the case of limbs, amputation is performed, either by the "no flap" circular method, or by the flap method leaving the flaps unsutured. These are turned back at each dressing, the parts thoroughly cleansed, a few Wright's tablets placed over the wound surface and then the flaps replaced. The injection of peroxide of hydrogen into the tissues has not rendered particularly good results in the cases of gas gangrene in which we have used this method.

Tetanus which was fairly common in the early part of the war has now become rare thanks to the prophylactic doses of antitetanus serum which is now used at all advanced dressing stations.

INTERNAL SECRETIONS

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THE reciprocity of activity between different parts of the animal body and the concomitant interrelationship of function has been well called the "*consensus partium*". It is within comparatively recent years that the manner in which the individual organs react upon one another and the mechanism by which their interbalance is maintained has been elucidated. The central nervous system, affecting and controlling as it does the correlation of the various physiological activities, supplies an excellent example of such a mechanism. By its means the coördinated activities of the different parts of the body are regulated and controlled, and it is little wonder, in view of the manifold characteristics of this controlling station, that scientists, until very recently, considered it the sole mediating agent between the many different parts.

From the time of the ancients a humoral relationship between the various organs has been given credence to and indeed this idea is older than that of the neural relationship of organs.

Soon after experimental physiology had found a sure footing it was seen that the course of normal development and growth might be materially modified by artificially modifying the chemical constitution of the fluids surrounding the organism. It was also noted that changes both qualitative and quantitative in the metabolic processes of some parts of the body did likewise. It was, therefore, clearly demonstrated that to the nervous regulating mechanism a chemical regulation must be added.

A great deal of the so-called automatic irritation of the nervous system is really brought about by the agency of the products of cell metabolism. Thus, in suffocation, the changes in respiratory and cardiac activity, the spasms of the voluntary muscles, and the tonic contractions of the muscular tissues of the blood vessels are

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due solely to over-irritation by the products of metabolism, an excessive quantity of which are circulating in the blood. The regulation of normal respiration is moreover due to the agency of chemical stimuli, of which the hydrogen ion concentration in the blood is the all important one. This latter is directly dependent on the carbon dioxide tension in the blood. In muscular work this goes up and at once the respiratory centre is aroused to greater efforts by a direct chemical stimulus. The fluctuations in respiration are therefore due to the varying amounts of carbon dioxide in the blood and they are entirely suited to the momentary needs of the organism.

By the term "metabolism" we give expression to all those changes which may occur in the manifestation of life. If the living organism is in a normal state it follows that the metabolism must be normal. This implies that there must exist a state of complete harmony between all the factors which make for a healthy, well-nourished individual. These factors have aptly been termed by Professor Noel Paton, "the regulators of metabolism." These regulators are of two types. In the first class we have the nervous system; in the second, definite chemical regulators. This latter class embraces the internal secretions of the so-called ductless glands and it is of these that I wish to speak more particularly in the few moments that are here allotted to me.

The first demonstration by means of experiment of the nature of the activity of a true ductless gland was due to Berthold, 1849. He showed the influence which an organ, through which the blood stream circulates, can exert upon the composition of the blood and hence upon the entire organism. The testicle was removed from a cock and grafted upon another part of the body, with the result that the bird remained "male" in regard to voice, reproductive instinct, fighting spirit, and the growth of comb and wattles.

Theoretically it is possible for each organ, each tissue and perhaps even each cell, acting through the agency of the blood stream to exert a definite influence upon other parts of the body.

Brown Séquard stated that all glands with or without ducts supply the blood with substances which are either useful or essential, the lack of which produces pathological signs. This generalization, however, would hardly hold true to-day.

Bayliss and Starling proposed that the name "hormone", meaning "to awake or excite", should be applied to those physiological substances which act as chemical stimuli and serve as intermediaries between different parts of the body.

Investigation has also shown that there is a considerable group of interactivities which are aroused in the body for purposes of offence and defence by the provoking causes of disease and by various poisons. This involves the production of numerous antibodies, etc., and this production is undoubtedly due to the chemical activity of various cells. The antibodies are then in the strictest sense of the term, internal secretions. But to confine ourselves to the chemical regulators of normal metabolism, in other words to the "hormones", our first inquiry should be as to the nature of these substances. They are specific chemical compounds produced by the activity of definite organs. They are for the most part of small molecular size and very stable. They produce their specific effect in infinitesimally small quantities, and they cannot act as antigens, which is to say, they do not cause the production of antibodies if they be injected into individuals other than those from whom they have been derived. True hormones have been classified according to the manner in which they act. Thus we have the formative and protective, growth-promoting and growth-retarding, stimulatory and inhibitory types.

The term "ductless gland" as applied to the source of origin of an hormone is in a way misleading. By gland we understand in the morphological sense a secreting epithelial structure which may or may not be provided with a duct. Now, since many of the internal secretions so-called, have their source in organs of a non-epithelial nature, it is at once apparent that the term "ductless gland" if it is to be retained is to be applied to a series of organs which have in common a similar physiological function to perform, though differing very widely in anatomical structure. Function then, and not structure, brings a varying group of organs together for common consideration.

Knowledge concerning these most important organs has been obtained in various ways. The experimental method of removing an organ and noting the effects produced thereby has yielded much valuable information as has also the method of grafting. But here, and perhaps more so than in any other field of physiology, has the clinical method been of inestimable value. Comparative anatomy and histology have also been of service in making clear the proper significance of these organs.

While an enormous amount of study has been given to the "ductless gland" in the last few years (indeed the papers on this one subject now number upward of three thousand) and a great deal of positive knowledge has been gained, there yet remain many

hazy points in regard to their mode of activity. Many theories have been put forward, which are of a very conflicting nature, by the different workers. But theory has always been in the advance guard and so we may expect it ever to be. The essential point is that from among the mass of evidence which has been put forward, many important facts are outstanding which are of the greatest value to practical medicine.

The structures which should be considered in a discussion of internal secretions are as follows, the suprarenal glands, the pituitary body, the pancreas, the reproductive glands, the thymus gland, the mucosa of the small intestine as well as that of the pyloric region of the stomach, the pineal body and the thyroid system.

The suprarenal bodies, as is also the case with other organs of internal secretion, have more than one function to perform. The medullary substance differs widely from the cortex, both in function, structure and origin. The medulla of the suprarenal is the seat of manufacture of the well-known chemical substance, epinephrine or adrenaline. The point of action of this chemical is the end-organ of the terminals of the sympathetic nervous system and is all-important in maintaining the tone of that system. The physiology of the suprarenal cortex is not so clearly understood as that of its medulla. It may have something to do with pigmentation as Addison's disease would seem to indicate. Some observers hold that the cortex regulates the nutrition of the reproductive glands. We have proof, however, that it is essential to life, as experiments on Elasmobranch fishes have shown.

The pituitary gland is composed of three distinct parts, a pars anterior, a pars intermedia, and a pars posterior. Each of these again, it is probable, has a distinct function to perform. The posterior lobe produces a chemical substance, pituitrin, which has found such great service in practice on account of its specific action on the uterine muscular wall. It also is a galactogogue, as has been shown by MacKenzie. The anterior lobe produces a substance of unknown nature which seems to regulate growth of bone. The work of Horsley and Cushing has done much to unfold the secrets of the pituitary body. Hyper-activity of the anterior lobe as is supposed to be frequently the condition in cases of tumour, leads to acromegaly or gigantism. Hypo-activity, on the other hand, may be the underlying cause of certain cases of obesity. There is also a certain relationship between the pituitary and the reproductive glands. The pars intermedia is believed by some to be closely associated with the thyroid gland.

The pancreas as an organ of internal secretion has been in much dispute. The peculiar islets of Langerhans, which are situated in the pancreas, have received various interpretations. That some close relationship between the pancreas and carbohydrate metabolism exists has long been suspected, but the complete failure in all attempts of organ therapy in diabetes mellitus did much to discredit this theory. Very recent work by Cohnheim and Levene has demonstrated the use of the internal secretion of the pancreas in the normal destruction of dextrose within the organism. Unfortunately, when the process becomes disordered pancreas feeding cannot correct the defect.

In dealing with the reproductive glands we must again clearly differentiate between the production of the sexual elements by these glands and the additional important activity, their hormone-elaborating capacity. The function of the hormones manufactured by the gonads has been quite clearly demonstrated. The internal secretion of the gonad becomes effective early in embryonic life and it is to the activity of this substance that the primary sexual characteristics are due. For example, it is impossible to have what might be called a neutral as regards sex. A male castrated early in life becomes quite different as far as sexual characteristics are concerned from a normal male, but yet does not approach in resemblance to a female also castrated at an early age. The hormones which regulate the sexual characters are formed in the case of the male gonad by the interstitial cells of Leydig, while in the female gonad the stroma ovarii are believed to be the seat of their elaboration.

After puberty secondary sexual characteristics make their appearance and they also are due to the activity of the internal secreting mechanism of the gonad. The activity of the female breast, one of the secondary features of sex, is due, it is thought, to the ovarian activity and also growth of the uterus. Ovulation, menstruation and the œstrus cycle are again all due to the periodic activity of this organ.

The corpus luteum which develops and attains a considerable size within the ovary, if ovulation has been followed by impregnation and fixation to the uterine wall, also assumes the part of a specific hormone producer. The maintenance of the embryo and later of the fœtus on the wall of the uterus is due to the functioning of the corpus luteum.

The swelling of the breasts and their preparation for lactation is probably due to a hormone produced by the fœtus itself, although the causation of this has also been ascribed to the corpus luteum.

The prostate of the male is believed to be an hormone producer. Removal of the prostate according to Biell leads to lessened spermatogenesis.

The thymus gland is closely related to the gonads. It functions until the age of puberty is reached at which time it involutes. While it is active the onset of puberty is impossible. It thus acts in holding the complete development of the reproductive glands in check until growth has become well advanced. During the period of its activity growth can take place very rapidly due to the retention of the calcium salts within the body, a process which it is held is facilitated by this organ.

The mucosa of the small intestine is also a seat of elaboration of a specific hormone. The substance secretin, which it manufactures and sets free only under the stimulus given periodically by the acid chyme poured out from the stomach, is the activator of the pancreas. Thus it is only when food has actually been taken that the pancreas is called upon to secrete the digestive enzymes.

The mucosa of the pyloric region of the stomach under the influence of the first end products of gastric digestion also liberates a specific chemical substance known as gastrin which passes by the blood stream to the glands of the fundus region and acts as an accessory stimulus to their activity.

As regards the pineal body it is doubtful whether it should be looked upon as a ductless gland. In times past various functions have been ascribed to this structure. It was said, for instance, by Descartes to be the seat of the soul. In cases of tumour of the pineal body of children the genitals have been noted to have been much overdeveloped.

The thyroid apparatus embracing the thyroid gland and the two pairs of para-thyroid bodies, is one of the most interesting as well as important of all the ductless glands. That the thyroid is a powerful agent in regulating metabolism was discovered in the middle of the last century by Schiff. The function of the whole system seems to be that of maintaining the balance of neuromuscular activity. The part played by the para-thyroids is, it is thought, widely different from that performed by the large single gland itself. This is demonstrated by the fact that removal of the thryoid alone leads to a different train of symptoms than the removal of the whole apparatus. The converse is also true. Likewise a diseased condition of one or other of the parts of this system leads to the manifestation of different pathological signs.

Without going into any detail, the various conditions in which

the thyroid system is known to be involved are as follows:—cretinism, myxœdema, Graves' disease, various types of goitre, paralysis agitans, certain forms of tetany and possibly eclampsia.

Hypo-activity of the thyroid itself is said to be the cause of myxœdema and cretinism and here it is very significant that thyroid medication is of great value in such cases.

Hyper-activity is the condition in exophthalmic goitre, while in certain other types of goitre a lessened activity of the gland is supposed to exist.

Removal of the para-thyroids leads to tetany. It is believed by some that the function of this structure is to destroy certain toxic materials which are present in the circulation. If these are not detoxicated, tetany follows.

I have now endeavoured to give as briefly as possible what physiologists to-day hold to be the functions of the chief ductless glands. A brief resumé such as this might lead one to suppose that each of these organs possesses some type of activity peculiar entirely to itself. Now, while this is the condition in the case of many of the endocrine glands, we must not overlook the fact that there is an interrelationship between these organs and even an overlapping in some instances of function. For example, carbohydrate metabolism is influenced not only by the pancreas but also by the thyroid and the suprarenals, while growth is affected by the gonads, the pituitary, and the thyroid bodies.

THE forty-second annual meeting of the Toronto Hospital for Incurables took place on October 27th. In his report, the medical superintendent, Dr. Edmund E. King, stated that 222 patients were at present in the home and treatment had been given to 329 during the year. Seventy-two deaths had occurred, including that of one patient who had been in the institution for thirty years and of another who had been there for seventeen years. The president, Mr. Ambrose Kent, referred to the need for more accommodation for patients suffering from cancer and expressed the hope that a new wing might be built which would furnish roo n for thirty patients.

APPENDICITIS

By Max O. Klotz, M.B.

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IN 1582 Ambrose Paré said that he had striven so successfully for forty years to bring surgery to a stage of perfection, that there was little left for posterity, except to add minor details which suggest themselves, to things already discovered. As late as 1882 S. D. Gross, first president of the American Surgical Association, stated "that if operative surgery has not reached its finality, it is as nearly perfect as we can hope to make it," and he had never removed an appendix.

It is not quite thirty years since Fitz first informed us of the conditions peculiar to the right iliac fossa, and since his day tons and tons of literature have been written about appendicitis, so that it seems almost presumptuous on my part to offer any more on a subject which has already been so voluminously covered on all sides.

It is almost superfluous to say that appendicitis is accepted to-day, not only by the profession but by the laity as well, as a purely surgical disorder, and while it would be, perhaps, not proper to say that cases do not recover without operation, or even that an operation is advisable in every case, it is desirable, however, to impress once more on the profession and the laity that every case of acute appendicitis should be looked upon as an acute surgical emergency and that steps should be taken at once to provide for the immediate coöperation of a surgeon.

It is just here that it is of the utmost importance that a happy understanding should be reached between physician and surgeon, as in this disease, almost more than in any other, it is frequently the case that "he who hesitates is lost".

Pathology. A clear understanding of the pathology of acute appendicitis will help much in advocating its rational treatment. For purposes of classification they are commonly grouped under the following headings: (*a*) catarrhal; (*b*) ulcerative; (*c*) purulent;

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(*d*) gangrenous. The lesser grades of the inflammatory process readily give place to the more severe forms. The catarrhal type of the disease we need hardly discuss because it is unusual to have patients with this condition referred to the surgeon. Undoubtedly, the catarrhal processes are but transient and accompany similar conditions of the bowel as the result of indiscretions in diet. In the remaining types of appendicitis we are dealing with an inflammatory process of such proportions that surgical intervention is necessary for the most rapid and safest measure to cure.

It is probable that the severe forms of appendicitis all have their beginning in an ulcerative process. In this, the appendix may be compared to the tonsil. In each of these structures lymphoid tissue is a prominent component of the organ and between the lymph follicles there are deep crypts whose shape and size vary much in different individuals. These crypts are prone to lodge foreign materials and bacteria. Where the crypts are wide the peristalsis readily evacuates the contents, but where the crypts are narrow or bottle-shaped, foreign materials are apt to accumulate and bacterial fermentation irritates the neighbouring tissues. Destruction of the surface epithelium is followed by superficial invasion of bacteria with development of ulcer. Such ulcers may be very shallow or at times the erosion is deep. These ulcers may be demonstrated in every case of early appendicitis. If the ulcer is localized, the wall of the appendix is not damaged to any great extent. On the other hand, the bacteria may migrate from the area of ulceration and lead to an extensive purulent infiltration of the wall. These two types, the ulcerative and purulent, are the most common met with in cases of appendicitis operated upon early.

A point worthy of note is that these acute lesions have their beginnings on the inner surface of the mucosa of the appendix. Appendicitis is not a metastatic focus of infection, but it is one which begins in an inflammatory process of the mucosa. The bacteria attacking the bowel wall are obtained from its contents.

The gangrenous appendicitis is, in the majority of instances, a sequel to the ulcerative type. Following the localized inflammatory process with ulcer, the bacteria tend to invade the wall along the routes of least resistance. Thus they migrate along the lymphatic channels which follow the periphery of the blood vessels. An inflammatory process is induced in the walls of the fine arterioles and veins followed by thrombosis. These thrombi continue to extend through the vascular tree of the appendix and into some of

the larger vessels of supply. With the occlusion of these vessels, the nutrition to a local area or even to the distal portion of the appendix is completely cut off without an opportunity of reëstablishing a flow by anastomosis to the affected part. Gangrene then supervenes with its wholesale destruction of the appendix wall. In short, gangrenous appendicitis is not directly the result of bacterial action but results indirectly through progressive thrombosis in an area of ulceration. The rapidity with which the involved tissues undergo necrosis is remarkable. Such necrosis or gangrene leaves no opportunity for the tissue to respond, but permits the leakage of bacteria through the entire necrotic wall with the great danger of peritonitis.

Perforation of the appendix may be the result of a progressive erosion in a localized ulcer or may be the outcome of a focal area of gangrene rapidly induced. In the former, which is accompanied by an inflammatory reaction, an exudate over the serosa attempts to wall off the outer surface of the injured tissue. Adhesions may form and prevent disastrous results after the wall has been perforated. If, however, gangrene is induced through nutritional disturbance, the rapidity of the necrosis of the involved tissue may give no opportunity for the tissues to protect themselves by exudate or adhesions.

In recent years some authors have claimed that appendicitis is the outcome of a blood distribution of bacteria gaining entrance to the body tissues at some distance from the appendix. The tonsil has been spoken of as the portal of entry. A study of human appendicitis can give no support to this theory. It is rare to find a metastatic abscess of the appendix and the character of this lesion is vastly different from clinical appendicitis.

Diagnosis. While it is impossible in a paper such as this, which of necessity must be brief, to go over the entire subject from the question of the origin of the appendix down to the last word in treatment, I would like to lay stress particularly on two points, namely; first, the necessity for early diagnosis, and, secondly, the equal necessity for early operation. Doubtless a great many mistakes in respect to diagnosis are constantly being made and will continue to be made, but let us hope that with increased attention to the symptomatology, weighing each symptom in turn and trying to give it its proper value, we shall become less liable to error and at times save our patients needless operations.

To amplify this point in respect to diagnosis permit me to quote a few cases from my own practice, which will go to show how easy it is to fall into error.

Case 1. Boy, aged seven years, sent in from the country with a note from attending physician, stating that patient had acute perforated appendix and asking for immediate operation. On examination I found the child to have a temperature of 104·1°, rapid and shallow respirations (forty), pain in the right side, extending from the mid-axillary line to the right iliac region; pain on respiration and occasional slight hack. Closer examination convinced me that this was nothing more than a simple lobar pneumonia, confined to the right lower lobe of the lung. Palpation of the abdomen showed a more or less general rigidity, due to abdominal breathing, but no tenderness on pressure anywhere. Operation, of course, was not done and in another forty-eight hours signs of a full blown pneumonia were present, from which, I am glad to say, the child made an uninterrupted recovery.

Case 2.—A child of twelve was referred to me for operation, who upon examination was found to have a temperature of 102° with pain in right iliac region and also in the right hip joint, the leg being flexed on the thigh and movement being exceedingly painful. Closer examination showed no tenderness on pressure over the appendix and there was a total absence of a history of acute onset of pain in that region. There was no vomiting, in fact, no gastro-intestinal symptoms. Previous history showed that the child had been suffering from acute inflammatory rheumatism and the present attack was an acute rheumatic arthritis of the right hip. No operation. Subsequently the child had other joints involved and was laid up for several months before making a recovery.

Case 3.—Young woman of twenty-two, seized with acute pain in the right lower pelvis at night, some vomiting and general abdominal distress. She was referred to me for operation and on examining her I found that she had no temperature, no increased pulse rate, but was menstruating at the time. Considerable tenderness existed over the area of the appendix and over the pelvis on the right side, and although my better judgement compelled me to believe that I had not to deal with an appendix condition, I operated here and found nothing more than a ruptured Graafian follicle, with some slight hæmorrhage into the pelvis. Appendix and other organs were absolutely normal. Appendix was removed, of course, and needless to say patient made an uninterrupted recovery, but here I was quite satisfied I had subjected my patient to an unnecessary operation.

Case 4.—A young woman of twenty-seven, married, and six

months pregnant for first time, referred to me for operation for acute appendicitis by one of my colleagues; giving a history of having had soreness in the right side with occasional acute exacerbations, covering a period of three or four weeks. The temperature had been irregular, the highest point reached having been 100°, pulse rate but slightly accelerated, general malaise, loss of appetite, constipation and occasional nausea. On examination I found her pulse rate practically normal, temperature of 99·2°, no tenderness over the appendix, but tenderness on deep pressure over the right kidney. Examination of the urine showed pus cells in abundance with some blood cells in acid urine. Catheterizing of the ureters showed pyelitis on the right side, the left being normal. Appropriate treatment with irrigation of the pelvis of the kidney cleared the condition up promptly, and she went on to full term pregnancy without further difficulty.

I might go on and cite still further cases of gall-stone colic, renal colic, crises due to movable kidney or those associated with locomotor ataxia, early typhoid, pus tubes, perforated duodenal or gastric ulcers, extra-uterine pregnancy, mistaken for appendicitis, but I have mentioned just these few cases to show how simple it is to fall into error and yet how, with a little care, we may prevent unnecessary operation.

Generally speaking, however, if we have a symptom complex of sudden onset of pain in the right lower abdomen with increased pulse rate and a rise of temperature, and if in addition we find an increased white cell count with, or possibly even without, vomiting, with more or less general abdominal tenderness and splinting of the muscles over the area of the appendix, we may be reasonably safe in assuming that our patient is suffering from an acute inflammation of the appendix and it may be well, perhaps, to remember here, that refinements in diagnosis in respect to the type of appendicitis should not be made before operation, but rather after, because it is only waste of time in acute conditions of this description, and a mistake in classifying the particular variety might lead to disastrous delay. Whether the inflammation of the appendix is of a catarrhal, perforative or gangrenous type, is a matter which can be settled much more easily with the appendix outside of the abdomen than in it.

Unfortunately, when called upon to see an acute case for the first time, within a few hours after its onset, we have no means of foretelling what will be the eventual course it may pursue. It is only a haphazard guess at best to try to draw any conclusions as to

whether resolution will take place or whether perforation with its attendant dangers is likely to occur. Hence it seems obvious, to anyone who has seen any large number of operative cases, that the earliest possible surgical interference removes all possible doubt as to the outcome.

Mortality. The mortality in cases operated upon within the first twenty-four hours is so low as to be an almost negligible quantity. Turner,[1] in referring to a large series of cases (3,951), operated upon in the Royal Infirmary at Newcastle-on-Tyne, gave a mortality of 2·6 per cent. in cases operated upon before general infection had occurred, and a total mortality of 5·1 per cent. Many operators give statistics of one hundred consecutive cases operated on within the first twenty-four hours, without a death, and I may add that my own records bear this out. DeQuervain's[2] results in over five thousand cases operated upon, in respect to mortality, were as follows: On the first day he had a mortality of ·690 per cent., after the second day 5·7 per cent., after the third day, about 10 per cent. and after the fourth day 21·2 per cent. It might be added here that of his cases operated on on the first day, mistaken diagnoses occurred in only 1·4 per cent. of his cases.

Kocher[3] reports two hundred and ninety-nine consecutive acute cases, not perforated, operated upon the first and second days, with no mortality. One should look on every case of acute appendicitis as a hæmorrhagic inflammation, including danger of necrosis of mucous membrane and wall. Remembering this, every case must be considered as one in which danger to life is imminent from the outset, and hence the necessity for the earliest possible operation.

The early operation as well argues against the occurrence of post-operative complications. As the statistics of deQuervain, just quoted, also show, complications occurred in only 7 per cent. of the cases operated upon on the first day, and in 20 per cent. of the cases operated upon on the second day, and from his series he has drawn the conclusion that of the four hundred cases of appendicitis that die annually in Switzerland, three hundred and sixty could be saved by operation on the first day. One may properly say here, that when a death occurs in a case of appendicitis, this fact in itself is prima facie evidence of a blunder on someone's part, and the same may be said of the finding of pus in the pelvis at the time of operation. This does not necessarily reflect on the surgeon or physician, but may be due to the officious interference of some member of the family of the patient, or possibly due to objections on the part of the patient himself to be operated upon until,

unfortunately, the more favourable time for operative interference has passed.

Fortunately it is our experience, as the years go on, that the general practitioner is realizing the urgency of acute appendicitis much more forcibly than he did even ten years ago, and even the lay public, recognizing this, asks almost at once, after a diagnosis of appendicitis has been made, "how soon will the patient have to go to the hospital?"

Cases of appendicitis from the surgical point of view may be grouped as acute, interval cases, chronic cases and incidental or chronic cases found in the course of operation for some other disease.

Treatment. The treatment of appendix conditions naturally varies according as we have an acute inflammatory appendix, with or without perforation and abscess, or a chronic condition, to deal with.

Now as to the time of operation in acute cases. This formerly was a very vexed question and I can recall twenty years ago listening with rapt attention to the profound discussions in the medical world as to what was the best time to operate. It is generally accepted now and I think the experience of all who have seen a large number of cases, that the time to operate is *at once*, and as Murphy says, in all conditions of acute abdomen, "Get in just as quickly as you can and get out just a little quicker."

The operative procedures themselves should be preceded by a definite line of treatment while the patient is still in the hands of the physician, and this differs considerably from the rationale followed only a few years ago. At that time it was generally customary to give an active purge promptly, calomel preferred, with salines following, morphine if the pain was very great and permission to the patient to take fluids. Experience has proven that the best results are obtained by withholding all fluids from the stomach, using lavage if there is any vomiting, and applying ice locally; in short, to limit peristalsis and reduce it to a minimum. It is only in the rarest cases that morphine may be required.

It is desirable occasionally to give an injection of one sixth or one fourth of a grain of morphine before a patient is removed to the hospital. I have made it a practice for some years past to give one fourth of a grain for adults, and correspondingly less for children, half an hour before the anæsthetic, as we have found that it takes less of the anæsthetic and there is less nausea, less pain subsequently, and less post-operative shock after its use. No purgatives are given whatever, and the skin locally is prepared as for ordinary abdominal

operations by the usual iodine method. It is immaterial whether one uses benzine, gasoline, or turpentine, provided the skin is thoroughly cleansed with soap and water and then painted with ordinary tincture of iodine. Personally I use the incision through the right rectus muscle almost entirely, as experience has proven that hernias are almost unknown by the use of this incision, which at the same time gives freer access to the pelvis, particularly in women, where one is apt to meet with other complications, and by being extended upwards if necessary, permits of the examination and treatment of other conditions should such be present.

Where the appendix has not yet perforated, it is as a rule readily found, particularly by following down the anterior bend over the cæcum, and removed after tying off, by means of the cautery.

For long years the treatment of the stump was a vexed question, but any means which will cover it with peritoneum and prevent the development of adhesions between it and surrounding organs will answer the purpose. In my own practice I pick up with a straight needle, threaded with silk, four points of the surrounding peritoneum either in the cæcal wall or in the ileo-cæcal fossa, and drawing these together by making traction on the two loose ends of the silk, make, in effect, a purse string suture which completely covers in the stump, and I have never had the slightest trouble afterwards. The neatest stump is obtained, probably, by cutting the appendix off flush with the cæcum and suturing the wound in the usual intestinal way, but this method takes more time and may invite infection. The wound is then, of course, completely closed up by a suture of the peritoneum, a suture of the sheath of the rectus, in fat subjects an additional row of interrupted cat-gut sutures, and finally the application of Michel's skin-clips, which are now almost universally used and commend themselves for their ease of application and corresponding ease of removal, and leave a cicatrix which in its æsthetic values, is much to be preferred to that following the use of silk-worm gut sutures, where coaptation of the skin margins is rarely as accurate as is the case when the clips are used.

Following the application of the clips the wound is painted with iodine and in many cases no dressing applied whatever, beyond an abdominal binder, the main object of which is to keep the patient's hands from fingering the wound. A very small pad of gauze may be laid over the clips and seems to add to the patient's comfort, but there is practically never occasion to use the huge pads of wool and gauze, which for so many years have been the accepted form of dressing by most conservative surgeons.

In all operations where we find the appendix perforated, with or without the presence of an abscess, and with or without the presence of limiting adhesions which may not have developed until after the third day, the appendix is removed as described, but here necessity will be found for the use of a drainage tube.

I may say here, that in practically all cases of abscess, with perhaps a single exception, the incision goes through the right rectus muscle. The exception is the presence of a retro-cæcal abscess which seems to point to the right. In these cases an incision close to the anterior superior spine permits of ready access, and frequently allows drainage extra-peritoneally, that is to say, the peritoneum may be peeled off the parietal wall and the abscess opened from its posterior surface, thus avoiding the opening of the general peritoneal cavity, but has the objection, however, of making the removal of the appendix frequently a very difficult matter and for this reason is rarely employed.

Where there is little or no pus present a cigarette drain may be all that is required, but personally I rarely use the latter, as its capacity for drainage is very limited, the gauze wick being saturated in a few hours, after which there is no further drainage. Consequently I much prefer the use of a stiff rubber tube, through which, after the removal of the appendix, any pus, either in the abscess cavity or the pelvis, may be aspirated and into which, before the patient is finally removed from the operating table, a gauze wick may be inserted to be removed at from four to six hour intervals, depending upon the amount of pus present, and through which collections of pus may be aspirated during the course of convalescence.

It is desirable in practically all cases in which abscess is present to remove the appendix at the same time, although issue has been taken in respect to this course by very eminent surgeons. Arx[4] and Van Buren Knott[5] both quote a large series of cases in which they have removed the appendix in all abscess cases and with most satisfactory results. Doubtless cases arise in which there is great difficulty in doing the radical operation, but the more experienced one becomes the fewer cases present themselves where the removal of the appendix will prove to be impossible. Its complete removal and the breaking down of all pus pockets in and about the cæcum, converting the area into one single large abscess cavity, facilitates drainage and shortens the period of convalescence, and furthermore at once relieves the patient of a secondary operation and doubtless removes the possibility of later complications.

Moore,[6] in discussing a radical operation in case of abscess,

recommends the removal of the appendix only when readily accessible. His belief is that the operation is not to remove the appendix, but to save the patient's life, and he thinks that the associated traumatism, which must necessarily occur when groping round amongst extensive adhesions for a buried appendix, must open up fresh avenues of infection. On the surface this appears to be reasonable, but it is my opinion, based on my own experience, that there must be very few cases indeed in which an appendix cannot be removed and I have yet to see any ill results following extensive breaking down of adhesions in the effort to locate the original cause of the trouble.

After-treatment. In simple, uncomplicated cases as described, the abdomen is closed completely, the patient kept on fluids until the third day, when an ounce of castor oil, followed by an enema, will empty the bowels, after which a general diet may be gradually resumed. In certain cases, where even if perforation has not occurred, there appears to be some exudate of a murky serious character, it is safer to drain although Elder,[7] in an address to the Saskatchewan Medical Association, two years ago, said, "When in doubt don't drain." This appears to me like inviting the devil to shake hands with one and looks like taking perfectly unnecessary risks. I should much prefer to insert a small drain for twenty-four to thirty-six hours, when, temperature and pulse remaining normal, it may be readily removed and the wound allowed to close, but in the event of any infection being present it will find an outlet and not diffuse itself throughout the whole peritoneal cavity, where it may produce sufficient damage to end matters rather seriously for the patient.

The simple cases are permitted to sit up in bed about the fifth day, out of bed after the sutures are removed and allowed to walk by the ninth or tenth day, and are, generally speaking, able to get about with every degree of comfort by the third week.

In cases requiring drainage the tubes are exhausted and aspirated from four to six hours and at longer intervals as the secretion diminishes, for whatever time is necessary, the large rubber tube being removed as soon as it is deemed safe, smaller ones substituted, or even simple gauze drains used.

All of these cases are, on their removal from the operating table, placed in the Fowler position and a proctolysis at once instituted. The Fowler position may, at times, cause gastric distress and vomiting, due to the dragging on the jejuno-duodenal fold, but this can at once be relieved by lowering the bed. After

the lapse of twenty-four hours fluids may be permitted by mouth. The drainage tube in the wound is shortened from day to day according to indications, and as a rule the wound is closed in about three weeks' time.

In severe cases with general peritonitis, in addition to the Fowler position and the Murphy drip, it is generally desirable to give a high enema every four hours of soap suds, to which are added a drachm of turpentine and 20 to 30 grains of quinine. Should the soap suds enema not be effectual in reducing distension, physostigmine in doses of one fiftieth of a grain, every two hours for six doses, is frequently very effectual. Where the toxæmia is intense with a rapid and running pulse, intravenous saline injections containing pituitrin, should be given if necessary twice daily, and are more effectual than any other means at our command.

Camphor and strychnine are but temporary expedients at best, and have but little place in our therapeutics, and cannot be depended upon to have any lasting salutary effect. Unsurgical as they may appear, hot turpentine stupes undoubtedly give relief in cases of peritonitis with paresis of the bowels and the associated great distention, and patients, as a rule, express their sense of comfort when these hot applications are applied. For the vomiting that occurs frequently in cases of general inflammation, lavage of the stomach gives more relief than almost any other measure and should not be neglected.

Should deep pelvic abscesses develop, which show themselves through later rise of temperature, pain in the lower pelvis, difficulty in micturition and a sense of pressure in the rectum, it is always advisable to make a rectal examination, when frequently a large bulging mass may be felt through the anterior rectal wall, and here it may be possible to drain by a free incision through the rectum with the insertion of a rubber tube, which will generally be spontaneously discharged, as the abscess cavity is drained and its walls collapse.[8] In women these pelvic abscesses should be drained by the vagina. Unsurgical as it may appear, and with the apparent possibility of secondary infection from the rectum, it has proven practically to be of the greatest value and followed by the most beneficial results, avoiding further abdominal operations with the difficulties which are necessarily associated with the draining of fluids up hill[9].

Chronic Appendicitis. Cases of chronic appendicitis as a rule give a history of more or less constant distress in the right iliac region, almost always associated with constipation, sometimes with occasional attacks of diarrhœa, and frequently with gastric symp-

toms. There seems to be a close connexion between this class of case and pyloro-spasm and duodenal ulcer. Aaron[10], of Detroit, found experimentally that pressure over the appendix induces pyloro-spasm and causes contraction of the first part of the duodenum, and reports a case where this is shown by using the fluoroscope. This is easily understood when we consider that the appendix has a large nerve connexion with the superior mesenteric plexus of the sympathetic, and with the cardiac, hepatic and gastric plexuses; so that the ætiology of gastric neuralgias and the hyperchlorhydria associated with chronic appendicitis is clear, and may explain the occurrence of duodenal ulcer in chronic appendicitis, an ischæmia being produced, permitting the gastric juice to attack the mucosa whose resistance is lowered. In these chronic cases too, a routine analysis of the gastric contents should always be made.

In many of these cases it is well to bear in mind that frequently the removal of the appendix alone is not sufficient to give the relief which the patient is led to expect. A certain percentage do get relief, where the symptoms have been due, in no small degree, to vascular changes which followed previous acute attacks, with the development of sclerosis of vessels, thrombi and end-arteritis, and changes in the nerves due to pressure of adhesions and cicatrices, which result in chronic neuralgias, so called, If, however, in another large percentage of cases, we neglect to relieve pressure from bands of adhesions which extend their influence over the terminal portion of ileum, the cæcum and ascending colon, or neglect to fix a preternaturally mobile cæcum and content ourselves with removal of the appendix alone, we are doomed, alas, to disappointment and will have the melancholy satisfaction of having back on our hands patients, more particularly women, who make life miserable for us and inflict their recriminations on us and cause the whole operation to fall into disrepute. It therefore behooves us in all these chronic cases, to explore that whole segment of the abdominal cavity thoroughly and try to discover all possible mechanical and other causes which may have had a bearing in the production of the symptoms, for the relief of which these patients have consulted us. Neglect to do so will only invite disaster for ourselves and will not enhance the reputation of the particular surgeon in question.

Hausmann[11] first drew attention to the factor of the mobile cæcum and mentions that "It is not necessary to have even a long meso-cæcum to produce trouble, but that a mesentery of the ascending colon and hepatic flexure may, by permitting rotation, give the signs of distress which are generally ascribed to a simple chronic catarrhal appendicitis."

End Results. In respect to the end results following operations for appendicitis, the best results are obtained in acute conditions operated on early, as it is the exception in these cases to have any complaints arising on the part of the patient in after years. Statistics, on the whole, are not particularly satisfactory as the patient is discharged "cured" from the hospital if he recovers from the operation. Lichty,[12] out of a series of 248 chronic operative cases which he followed up, reports satisfactory results in 50 per cent. In 10 per cent. no beneficial effect resulted from the operation in respect of the symptoms complained of, and 16 per cent. reported exceedingly unsatisfactory results, and in regard to the latter one may perhaps assume that other conditions, such as movable kidney, Lane's kinks, ptoses and unrelieved adhesions, were probably the reason for the further continuance of symptoms which drove the patient to the surgeon for the removal of his appendix. Were we in England, I have no doubt a large percentage of these cases would gravitate to Lane's clinic at Guy's Hospital.

Summarizing

1. Early diagnosis and close coöperation between physician and surgeon.
2. Early operation takes only a few minutes for its performance, has a low mortality and is least likely to be followed by serious complications.
3. In chronic cases remember associated complications such as "veils," peritoneal bands and adhesions, mobile cæcum and colon, digestive disturbances, and do not neglect the analysis of the stomach contents.
4. Remember that the end results of operations for chronic appendicitis are least satisfactory.

References:

1. Turner, *British Medical Journal*, June 12th, 1915, p. 993.
2. deQuervain, Schweiz, *Rundschau für Medizin*, 1913, Nos. 4 and 5.
3. Kocher (ibid).
4. Von Arx, Schweiz, *Rundschau für Medizin*, 1913, Nos. 4 and 5.
5. Van Buren Knott, *Journal American Medical Association*, Vol. lxii, p. 1004.
6. J. E. Moore, *Journal American Medical Association*, Vol. lxiii, p. 757.
7. Elder, *Canadian Medical Association Journal*, February, 1915.
8. Schrager, V. L., *Surgery, Gynecology and Obstetrics*, Vol. xxii, p. 482.
9. A. MacLaren, *Journal American Medical Association*, Vol. lxiii, p. 755.
10. Aaron, *Journal American Medical Association*, Vol. lxiv, p. 1845.
11. Hausmann, *Zentralblatt für Chirurgie*, Vol. xli, No. 3.
12. Lichty, *Pennsylvania Medical Journal*, January, 1915.

EARLIER DIAGNOSIS OF PULMONARY TUBERCULOSIS

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EARLIER diagnosis of pulmonary tuberculosis is essential both for preventative and curative medicine. There are many cases of open tuberculosis, who have never suspected the disease, who are taking no precautions to protect their associates and are steadily growing worse themselves. There are at least five hundred deaths a year from tuberculosis in New Brunswick. It is difficult to get an agreement on the average duration of the disease, but five years seems to be a fair estimate. This means there are twenty-five hundred active cases of tuberculosis in New Brunswick. Yet it is a safe guess that there are not over seven hundred diagnosed cases. The great need of diagnosing and treating cases as a preventative measure was shown by Dr. Pryor, of Buffalo, who examined one hundred and thirteen families in which a death from tuberculosis had occurred, and he found 40 per cent. of the members of the families had demonstrable tuberculosis. The great susceptibility of children to the infection was demonstrated by Alfred Hess, of New York. He had ten babies in a hospital ward where every precaution was taken against the babies becoming infected by tuberculosis. On admission three of the babies gave a positive Von Pirquet. A nurse, who it was later found had tuberculosis in her sputum, cared for these children for six weeks; nine months later the ten children gave a positive Von Pirquet, while in other wards of the hospital, there was no change in the Von Pirquet reaction. This demonstrated not only the great danger of infection of children by unsuspected cases of tuberculosis, but also the importance of examining exposed cases. The twenty-five hundred cases of tuberculosis in this province need to be located, cared for, and educated in a definite, clear-cut manner. In the so-called incipient stage, 90 per cent. should make a good

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recovery, 40 per cent. would be a high average for the moderately advanced, while of the far advanced stages very few can hope for anything better than an improvement in their condition. Every day of delay in diagnosis and treatment diminishes the chances of the patient's recovery. Of the probable eighteen hundred undiagnosed cases in this province a number of these have never consulted any physician, but the majority of them have been treated for one illness or another, probably, the diagnosis of neurasthenia has been the most frequent one. G. D. Head in the *Journal of the American Medical Association* in 1914 said regarding concealed tuberculosis: "This symptom type is the symptom complex, now recognized by clinicians the world over as neurasthenia." Bronchitis, run down condition, menopause, indigestion, are the common diagnoses made in the early stages of the disease. At the stage of the disease of many of these cases the diagnosis is not easy and would require every aid in making the diagnosis, but a large percentage could be recognized without much difficulty if the physician believed in the need of early diagnosis and treatment, and so was on the lookout for the disease. In the past there has been little inducement to the physicians to spend a great deal of time in making an early diagnosis, as they were more or less helpless regarding treatment in the majority of cases. Sanatoria, however, have done a great work, by treating only the more curable cases and so educating the public that tuberculosis is a curable and preventable disease. Now that the public are convinced it is worth while to make some sacrifice in the attempt to regain their health it is no longer difficult to get them to take medical advice even if they cannot go to an institution, and especially can they be taught to protect others. The diagnosis must be explained explicitly as soon as it is made. There should be a health insurance such as adopted recently in England, so that when the wage earner becomes ill his family can have some financial assistance. This insurance would also provide for medical attendance and thus assure earlier diagnosis.

The dispensary must be very greatly developed, even country districts should have some form of dispensary or visiting physicians, the dispensary should be the centre of the tuberculosis work, and act as a distributing agent. The great use of the dispensary is to diagnose tuberculosis in these patients who cannot afford to pay for a thorough medical examination. The physician at such a dispensary has an opportunity of becoming more or less expert in the diagnosis of tuberculosis, so that every district may have a man

giving special attention to tuberculosis. The nurse at such a dispensary is possibly of even more importance than the physician as it is her duty to follow up the exposed or suspected cases, so that many cases of early tuberculosis may be found. There should be a great extension of free institutions; these should not be considered charitable, but on the same basis as public schools; the sanatorium should now no longer have to depend for its existence on private philanthropy, and should be more or less national, and every county or perhaps two or more counties together should have a hospital for advanced cases. Thus with the dispensary, the sanatorium for early cases, the hospitals for advanced cases and a health insurance, there will no longer be the plea of the lack of finances to make earlier diagnosis and treatment possible.

Even, however, in well-to-do patients has the diagnosis been overlooked. This is partially explained by the large number of cases of inactive tuberculosis seen in general practice, and the active case goes down hill so slowly with its period of apparently complete recovery, that the busy practitioner becomes indifferent to the diagnosis and does not appreciate the need of very definite treatment. Although over 90 per cent. of people have tuberculosis they do not have demonstrable tuberculosis. Every case of demonstrable tuberculosis should be diagnosed and then the case decided on its merit, whether it needs treatment or not. There is no harder problem in medicine that that of deciding what tuberculous case needs treatment. With the diagnosis of tuberculosis made, and the patient told of the diagnosis, then if the disease is not considered active the patient can be watched carefully and examined at least once or twice a year and at the first appearance of activity definite treatment instituted. The futility of advising patients to go to the country for rest, to take good food and plenty of rest and fresh air without strict supervision by the physician can only be appreciated by those who have continued to go down hill under such advice and treatment.

With the busy practitioner, the question of time needed to make a diagnosis is a most important one, but there is no way to get away from this; if the patient is poor he should be sent to the dispensary, if he is not poor he should be charged a fee that would warrant the time needed being spent on him. To make a diagnosis of early tuberculosis requires at least one hour, and some of the best men require even longer. Tuberculosis can often be diagnosed only by exclusion and an examination of the chest alone is rarely justifiable. Once a physician has recognized the importance of

early diagnosis and is willing to spend the needed time on the patient he will be startled at the number of cases of tuberculosis he will find, and will be surprised at the improvement in his technique, giving him earlier and earlier diagnosis.

The importance of a systematic thorough history is greatly under-estimated. Many cases can be diagnosed by a properly taken history, yet the physical examination might reveal little or nothing. The family history is very important; while tuberculosis is no longer considered hereditary, yet according to Carl Pearson's statistics, the lowered resistance follows Mendel's law; not only this, but it is very generally recognized now that tuberculosis infection occurs in childhood, becoming active later when there is some special drain on the system, so that any case of tuberculosis in the family especially during infancy of the patient is most important. The past history should be followed out thoroughly and history of pleurisy meaning active tuberculosis within seven years in 45 per cent. of cases, history of blood spitting which is almost pathognomonic, morning cough, loss of weight, even slight expectoration, are all very important. Contrary to the general belief early cases very often suspect tuberculosis and any one who suspects he has tuberculosis should not be dismissed lightly, every system of the body should be gone into thoroughly, as often something most unexpected will be brought out that would be overlooked if not specially inquired about. If the history is written down it is surprising how much more one will get out of it especially in a differential diagnosis; the line of questioning is to be suggested by each case.

Next to the history perhaps the temperature and pulse record can be placed as not only is the temperature and pulse record needed for diagnosis, but the line of treatment depends largely on the history and condition of temperature and pulse rather than on physical findings. The patient should be at rest for one hour. The temperature may be taken in the mouth, the thermometer should be under the tongue at least five minutes to give a correct reading, if it is suspected that the mouth temperature is not correct the rectal temperature may be taken allowing three fifths of a degree and this may reveal occasionally that the patient is running a little fever not shown by the mouth. The question of normal temperature is a much disputed one; especially the European men claim even $99\frac{3}{5}$, particularly in women, to be normal, but personally I have never known of such a normal temperature excepting in one man who was given a certificate by one of the best men at Johns Hopkins, that his normal temperature was $99\frac{3^{0}}{5}$.

Three years later I met this man, a chronic case of tuberculosis, at Saranac Lake. It seems as if a temperature of 99° or over for three days or more without any explainable cause is very suspicious of tuberculosis. This is very much strengthened if the early morning temperature is sub-normal, so that there is a variation of over 1½° a day. In early cases the temperature is sometimes normal, but if the temperature is taken every two or three hours a day it is surprising how few of even the early cases run a normal temperature. In those with a normal temperature occasionally, a brisk walk of one to two miles will send up the temperature and it will not drop in one-half hour as it would in a normal person. A post prandial or a premenstrual rise of temperature has been looked upon as normal, but now even this elevation is regarded with suspicion, and in most cases of tuberculosis there is an increase in the pulse rate and an unexplained pulse of ninety or over is very suggestive of tuberculosis. Other causes of fever such as pyorrhœa alveolaris, disease of the accessory sinuses, obscure pelvic disease, etc., must all be carefully excluded.

As regards physical examination there are a few points to which I would like to call special attention. The findings should be recorded both for immediate and future reference. Inspection is very important and is greatly neglected. The patient should have the clothing removed to the waist, and should be seated comfortably in a warm room; the warm room is rarely found in a doctor's office, yet this is very important, a cold room may cause a rigidity of the muscles to alter the percussion note, or may cause muscle rales, which can easily deceive the examiner. The head should be drooped forward with the arms hanging loosely by the side. Observe the patient as a whole, condition of skin, then the chest for depressions, immobility of acromium, angle of Louis, prominence of the sterno-clavicular joint, which is said to point to the diseased side. Diminished or delayed expansion although very important in the adult does not mean so much in the child. Inspection perhaps shows more of the patient's general condition than of the chest condition, in the early stages of tuberculosis, but even in early cases it is important, especially for differential diagnosis. Palpation should be carried out thoroughly, all the lymphatic glands, especially the supra clavicular and abdominal glands should be palpated, a large percentage of apparently normal persons have enlarged cervical and axillary glands. Recently it had been claimed that even in early cases the trachea is pulled over to the diseased side, and this should be palpated with the thumb first on one side, then

the other, just above the sternum, palpation will probably show diminished or delayed expansion better than inspection, but one must be careful not to be deceived by suggestion. Tactile fremitus is best tested by light touch of the right hand. Diminished fremitus may be found over some area of old pleurisy, but outside of this there is rarely much change in fremitus in the early cases. Muscle rigidity over a new lesion and wasting over an old lesion may be looked for, any tenderness should also be noted.

Percussion is now coming into more and more prominence, and many men claim even more for percussion in early diagnosis than for auscultation. The change in the view point regarding the value of percussion is due to the change of method. It is now recognized that the lightest possible percussion gives by far the best results. While theoretically percussion should only show gross lesions, practically very light percussion shows an altered note very early in the disease. The room should be perfectly quiet and no one moving about or whispering, the physician should be seated comfortably within easy reach of his patient; he should use a flesh pencil to mark his findings, and he will be surprised at first at his varied findings if percussion is checked by the flesh pencil. Corresponding areas over the two sides should be very lightly percussed, then percussed very lightly and rapidly from below upwards, on each side. There should be no appreciable difference in the note going from below upward, excepting possibly at the second rib ant., and in muscular persons over the rhomboid muscles, where the note may be a little high, heavy percussion may later be tried to see if the dullness is superficial or deep. Mark out Krönig's isthmus and this may show quite a retraction even in fairly early cases. Percuss over sternum, over the vertebræ and alongside the vertebræ, looking for bronchial gland enlargement. Riviere says dullness at the apex of upper and lower lobes of a lung is pathognomic of tuberculosis.

Auscultation is what most physicians depend on entirely for diagnosis, yet auscultation probably takes better training both in hearing and interpreting abnormal sounds than any of the other methods. There is no need to mention the changes in breath sounds that may be found; but the importance of comparing the inspiratory and expiratory sounds over corresponding areas of the lung is often overlooked, because harsher breathing is expected at the right apex this often causes a gross lesion to be overlooked, at the right apex. Listen carefully over every bit of the thorax, and listen to the full inspiration, in distant breathing sighing breaths may bring out

bronchial breathing. In listening to voice sounds many look for bronchophony or whispered pect. instead of voice changes or differences on the two sides. Bronchophony or whispered pect. over the first to the fifth v. s. is suspicious of adenopathy. In auscultation, probably rales are of more importance than the breath sounds to the average man, as they are much easier to hear and interpret. Rales are not found in the earlier stages of the disease, and when rales can be heard in quiet breathing the case is no longer early. To bring out the so-called latent rales let the patient breathe out and just before the end of expiration give one or more chest coughs followed by a deep inspiration; this will bring out many rales not otherwise heard, a cough during inspiration is too loud and not nearly as effective as that during expiration. The expiratory cough will often be a great help in diagnosing between pleural and intra-pulmonary rales, although even pleural rales are sometimes increased by cough. Rales of different kinds are really of about equal importance as far as presence of disease is concerned. The location of rales is of much more importance. Permanent rales at an apex have been considered diagnostic of tuberculosis, but Riviere says that fine rales at an apex may be caused by a simple catarrhal condition. Price, of London, says tuberculosis should never be diagnosed on one sign alone, but requires some corroborative sign. There are spurious rales that must be carefully excluded, gas in the stomach may produce sounds that will simulate rales, to be heard even at the apices, muscle rales, especially in the scapular regions, swallowing of saliva, joint crackle, may all produce sounds that may be mistaken for rales. A case may become advanced chronic without having any rales that can be heard.

Sputum examination is very important, but a positive examination is of very much more importance than a negative examination, as tuberculosis bacilli are ocasionally absent even in advanced cases. In examining for tuberculosis bacilli the stain should be made up with freshly distilled water, as distilled water that has been standing for some time may contain acid fast bacilli. Sputum containing many lymphocytes is strongly suggestive of tuberculosis. The albumin reaction is considered of some importance in differential diagnosis as this is supposed to show inflammation of the alveolar tissue; the various blood tests can be of little value to general practitioners. An Arneth count is really of no diagnostic value.

The *x*-ray is now a very great aid and may show cases of concealed tuberculosis, especially tuberculosis of the bronchial

glands, and in every doubtful case the *x*-rays should be used if possible. The fluoroscope may be of some assistance. The Von Pirquet test is of little value excepting in children under four years of age, when a positive reaction practically means active disease. A negative reaction in an adult is of some importance but the better one's technique, the fewer negative cases will be found in adults. The intracutaneous will probably replace Von Pirquet test. The subcutaneous test will rarely be used by the expert, and in the hands of one not thoroughly familiar with the test there are great possibilities of serious harm being done. Added to all the above will often be needed many tests such as Widal's, Wassermann, blood counts, urinal analysis, etc., to exclude other diseases, as tuberculosis at times may only be diagnosed by process of exclusion. To say a patient positively has not tuberculosis is to say something one cannot be sure of. One may say that he cannot find any evidence of tuberculosis and after he has exhausted every means for a diagnosis he can only be reasonably certain tuberculosis is or is not present. To know whether a case needs treatment or not may require careful observation for weeks.

In making earlier diagnosis of tuberculosis, the first essential is to believe in the need of the diagnosis and that it cannot be made in a few minutes time, then comes history of the case, a record of the temperature and pulse, physical examination, of which light percussion and expiratory cough are of the greatest importance. Laboratory methods, the use of the *x*-ray, and as a last resort tuberculin may be used. After all errors of omission are worse than errors of commission, and it is errors of omission that cause so many delayed diagnoses. If the physician waits until he can make an absolutely positive diagnosis in many cases he will wait until it is too late.

In a report to the Ottawa Board of Control on the water supply of that city, Mr. Joseph Race, the city bacteriologist, stated that the cases of typhoid fever reported in Ottawa during the year 1916 numbered 10, three of which died. This is a great improvement upon the years 1911-1912 and when 1,160 cases and 76 deaths, and 1,300 cases and 84 deaths, respectively, were reported. In 1913 there were reported 90 cases and 14 deaths; in 1914, 86 cases and 9 deaths; and in 1915, 47 cases and 12 deaths.

NOTES ON SPECIAL WORK IN A FIELD AMBULANCE

By Captain Percy G. Bell, C.A.M.C.

ANY consideration of work of field ambulances in the present war demands an understanding of the varying conditions under which these units are obliged to work. The advent of the present system of trench warfare with fixed positions tends to transform mobile medical units into more fixed stations. Thus a field ambulance, less its advanced dressing station, is frequently doing work of clearing hospital nature. This is noticeable, for instance in the case of the 1st Canadian Division, which from the time of its arrival in France was able generally to work its front with two field ambulances, leaving the third to act as a Divisional Rest Station, usually at a point four to six miles behind the line.

In open fighting the ambulance problem is rapid collection and evacuation, and in the present operations a third factor becomes relatively of increasing importance; that is to say, the saving of every possible man to the battalions.

The field ambulance should take on a sieve-like nature, reminiscent of the biblical eye of the needle, for all sick sent down by the regimental medical officers and that because, if a man becomes involved in the cogs of the lines of communication machinery, he is lost for a considerable time to his unit. The ambulance carrying on the Divisional Rest Station is able to return a number of such cases to duty, cases which are held if they are likely to be fit within ten days or so.

The rest station is generally situated in some fairly large building; a schoolhouse, convent, farm or factory, and here the unit carries on as efficiently as possible with the means at its command. The patients are of the class who have temporarily broken down under active service conditions, rheumatism, carious teeth, painful trench feet, "trench fever"—eye, ear, nose and throat conditions, and the like. Stretchers serving as beds, although not proverbially soft couches, may under the circumstances be relative luxuries. A bath house is essential also, and the establishment of this gives rise to the exercise of much ingenuity, especially in villages where

water may be scarce and the pump is guarded by a water detail with a diligence that outside of the war zone is not usually expended on such a fluid.

Gastro-intestinal cases we found to be benefitted by the free use of a pure bottled water which we were able at times to purchase locally, thanks to the gift of a sum of money from friends in Canada.

It happened in this field ambulance that most of the officers had been doing special work in civil life in Canada and the officer commanding tried as far as possible to take advantage of this in distribution of cases, as it is obvious that the best results would be so obtained. In this way, too, probably more interest of a purely medical nature was felt in the cases than otherwise would have resulted. This applied of course to work either in the main part of the ambulance during ordinary line work or the periods at the rest station.

Those of us who happened to be stretcher-bearer officers took turns at the advanced dressing station during which time the work was transportation rather than medical. We always referred to this as the "soldiering" part of our career. The advanced station was no place for special work. It was usually situated in a farm building about a mile from the line and at varying distances from the main ambulance from about a mile, to, in one case, about eight miles.

Ideas of field medical work in former wars have had naturally to be modified under the conditions of modern artillery fire. Military text books, in speaking of the choice of an advanced dressing station, lay down the axioms that the place should be away from main cross roads and not near guns, etc.

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As far as eye, ear, nose and throat work is concerned, no special arrangements exist in an ambulance. The equipment of a special nature provided consists of a mirror, a lens and an ear syringe. These together with some private instruments and a few authorized to be bought specially, make up the armamentarium. An ingenious sergeant fitted up an examination lamp for me out of a few pieces of wood and a bicycle lamp which he connected with our portable carbide lighting plant. A dark room could generally be arranged in a cellar, or fundus cases could be examined at night.

During an action when wounded were being evacuated as fast as possible special dressings have to be applied. At Ypres we had an imperative tracheotomy case or two and a number of gunshot wounds of the face involving eyes, ears and nose. I do not con-

sider that enucleations of the eye should be carried out in a field ambulance except under very exceptional circumstances.

In a short paper like this there is not time to go into a classification of the various wounds of organs of special sense but there are several classes of cases whose importance and frequent occurrence justify a few words. Nerve deafness due to the intensity of gun-fire is important, not only from its frequency but also on account of the relation it will bear to the question of pensions after the war. The time has been too short to work up a very satisfactory pathology of this condition as a knowledge of the permanent results cannot yet be obtained. The most satisfactory hypothesis at present seems to be damage to the cochlear threads. It would appear desirable that as far as possible the gun squads be supplied with some form of ear defender. Many of the types which are upon the market have proved very useful in absorbing shock without at the same time interfering markedly with the perception of voice sounds. The preservation of hearing to the men at the front is of the greatest importance.

Wounds of the head occur frequently as in the case of men looking over the parapet or being hit with the fragments of shrapnel, etc. Any wound of the eye occurring under such circumstances is likely to be serious, whereas such an injury to other parts of the face may be relatively trifling. The steel helmets which the French infantry wear are said to have decreased the number of such wounds to a notable degree. The same is true of the British helmet now supplied to our men at the front. In a number of cases men were brought into the dressing station with almost total enucleations performed by fragments of shrapnel. The pulping damage done to the eye by a rifle bullet is of course great. Rifle bullet wounds in trench warfare appear to exhibit their great destructive power partially owing to the fact that the modern bullet in taking its spin from the rifle does not settle down to a smooth flight for about three hundred yards and this is less than the average for distance between the trenches.

A type of case rather frequently met with is a concussion injury to the eye-ball caused by impact of a bullet or shell fragment near the bony walls of the orbit. Various degrees of this may be found in which the injury varies from a rather severe commotio retinæ such as is seen in civil life, to ruptures of the choroid and in one case which is called to mind, of fracture through the wall of the canal with optic atrophy following injury to the nerve.

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During periods of the ordinary life of the line, and in the tent division of the ambulance, quite a large number of special cases appear for treatment. These are much the same as one might see in practice anywhere; cerumen, otitis media, furuncles, various nasal conditions, tonsillitis, laryngitis, foreign bodies in the eye, conjuctivitis and accidental injuries. Many of them demand quite simple treatment, which, if given early, will suffice to return a man to his duty. In some, especially in cases of malingering, a decision communicated to the regimental medical officer, is all that is required. Many men become anxious about a running ear or something of that sort and if reassured will return cheerfully.

In conclusion it may be said that, although no provision has been made in the ambulance for officers doing special work, other than dentists, it has so happened that there has always been a specialist with one or other of the field units. Our cases for refraction we were able to send to an R.A.M.C. Stationary Hospital. No Casualty Clearing Station with which we were in communication had facilities for any special work.

THE seventy-second annual meeting of the Montreal Maternity Hospital took place on November 23rd. The number of patients received into the Hospital during the year ending October 31st, 1916, was 1,034, rather less than during the previous year, when 1,135 were admitted. Of these patients twelve died, as compared with eight during the previous year, which is explained by the fact that a larger proportion of serious cases are now sent to the hospital. The births numbered 1,051, including twelve pairs of twins. Fifty-three deaths of infants were reported, death occurring before delivery in sixteen cases.

A CASE OF SHELL SHOCK

By Captain Edward Ryan, C.A.M.C.

Orpington Military Hospital, Orpington, Kent

PRIVATE F. was admitted to the Ontario Military Hospital on June 8th, 1916. He was both deaf and mute. The patient was born in London, England, on September 5th, 1890.

Family history: father died at age forty-two, does not know cause of death. Mother living, aged forty-seven. Three brothers living, one sister living. None dead. Previous health was excellent.

He went to Canada in 1905 and enlisted in the 33rd Battalion in London, Ontario, in August, 1915. He was transferred to the C.M.R. on March 26th, 1916. He landed in England on May 26th, 1916. On May 28th his unit went to France. He was in the trenches thirty-six hours, then his unit was ordered to make an advance. They drove the enemy back three times; on June 1st, 1916, a shell blew in his dug-out, killing all his companions. He was rendered unconscious for a time. On recovering, his ears were ringing and his voice was very low. He crawled back to a machine gun which he turned on the enemy. Another shell blew him up and he again lost consciousness. When he came to, he was being taken to a dressing station. He had a violent headache and was completely deaf and mute.

On entering the Ontario Military Hospital he complained of headache. There was pain and tenderness along the course of the seventh nerve well up in the temporal region and pain also across the frontal region. There was pain also along the course of the posterior auricular. He was absolutely deaf. He could not speak, whistle or laugh. There were no marks of external violence. There were no organic lesions.

The psychic manifestations were both pronounced and interesting. The patient was oriented in time, place and person. His memory for past events was undisturbed. For recent events, his recollections up to the time of shock were quite clear. Here the

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train of events was broken and the patient has but a hazy knowledge of even such rather special events as his lumbar puncture. The patient was quite depressed. He had a strained and anxious appearance. Something had gone wrong with his life and he seemed to be struggling hard to adjust the train of events. He would rest on his elbow with his hands in constant motion. His lips were frequently moving as though he were talking to himself There were fallacious sense perceptions, especially of hearing. The patient maintained he heard the noise made by the bursting of shells, the explosion of mines, the crack of rifles and the general din of battle.

He had but little insight into his condition. He stoutly maintained that his hearing was all right but those conversing with him would not speak aloud. He would frequently write, "Why do you not speak out so that I can hear you?" He was irritable and peevish and these characteristics were increased when the physicians, nurses nnd visitors were present, and were more evident during the first few days of his residence in the hospital. The only delusion observed was one that his friend who, by the way, was in another part of the hospital, had visited him and had remained with him all night. He had talked with his friend and fully expected that he would come again and remain with him.

There was nothing unusual in his conduct. Of course he was kept in bed and under close observation from the time of his admission until improvement was quite manifest. The only incident was his writing that he hoped the barber who came to shave him would make a clean job of him, indicating what he meant by drawing his finger across his throat. Of course we had taken precautions against suicide and a nursing sister was in attendance day and night during his period of depression. He was quite emotional and would weep without any discernible cause. There was considerable clouding of consciousness. He was receiving but few impressions from the external world. On the evening of June 13th, he received a letter from his friend which he read carefully. On the following morning he was very excited. Of course he fully believed that "Bill" had spent the night with him and that they had talked together for hours. He was quite at a loss how to account for the letter and evidently was labouring considerably to adjust the sequence of events. On that morning he began to speak to the nurse wanting to know why she took his friend away. His voice at first was thin and almost indistinct, but it has gained in volume daily. Since he was really convinced that he could talk, of which

at first he appeared in doubt, he has improved rapidly. He has gained eight pounds in weight.

He is still absolutely deaf; this fact, however, does not appear to worry him very much. Having one faculty restored, he seems quite contented, fully believing that in time he will be able to hear all right. At present he is quite cheerful and happy and I would say that, with the exception of his hearing, he had regained his normal condition.

The causative factors in cases of his character have given inspiration to a vast amount of literature, to opinions, theories and speculations of endless variety. I think, however, it is now generally conceded that the condition is purely psychic, but that trauma, and the idea of a trauma are contributary or predisposing causes. Mott says: "I believe this mutism is due to functional paralysis of the voluntary cortical nervous centres which control phonation, for many cases cannot produce any audible sound, for they are not only unable to talk or whisper, but to whistle, to utter a cry or to laugh aloud." I think also that other obscure conditions, the hysterias, anæsthesiæ, paralysis of limbs, of various groups of muscles are purely psychic though the idea of trauma may be present. Cases of deafness and mutism follow a bombardment where the patient for the time being can hear no other sound not even the sound of his own voice. Of course there can be no doubt that the detonation caused by high explosives exerts considerable cerebral pressure. The investigations of Lord Sydenham prove that in many cases there is a dynamic pressure exerted of ten tons to the square yard.

Mr. Arnaux, a civil engineer of Paris, has proved by experiment that the pressure exerted by exploding shells is equivalent to 10,000 kilos per square metre, which is even somewhat beyond the conclusions reached by Sydenham. What effect this pressure may have on the nerve cells it is hard to determine as post-mortem findings are not available. It is, or may be supposed, that the dendrons of the cerebral cells are temporarily paralyzed and the association tracts are thrown out of adjustment, if only temporarily. It is also suggested that pressure is exerted on the cerebrospinal fluid causing œdema of the cerebral cells with the consequent diminution of function.

In like manner the suggestion of injury is present, tremors, local palsies and in paralysis of limbs, the patient was blown against the parapet, sandbags struck him in the back or arm or legs. There may be no evidence of any injury, no wound, no tenderness, and

yet the arm is numb, or the region paralyzed, as in the case of a bursting shell the influence is purely psychical.

The general condition of this patient would indicate a psychical rather than a physical trauma. There is scarcely a patient in the ward who does not, each in his own way, contribute to this evidence. The depressed or excited expression, the areas of anæsthesia, the cold blue perspiring extremities, high pulse, quickened respiration, low blood pressure, are pictures quite familiar to all who have to deal with the psychosis or the psychoneurosis. By the psychiatrist indeed these symptoms are met with daily.

Of great value in arriving at the causation, diagnosis, or a prognosis in these cases is correct information as to the mental and bodily condition of the patient at the time the shock was received. The influences may be—1. Hereditary: (*a*) a timid disposition; (*b*) a neuropathic or psychopathic inheritance. 2. Acquired: (*a*) lowered resistance due to alcoholism, syphilis, or previous disease or head injury; (*b*) nervous exhaustion due to mental stress, anxiety, insomnia, terrifying dreams, etc.; (*c*) bodily exhaustion from heat, cold and hunger, etc.

In many of the cases I have seen in the various hospitals the ear marks of degeneracy were observable and the histories of the cases confirmed the observations.

In our own wards at present two cases had syphilis, one a serious head injury, for nearly eighteen months two had been free drinkers, and one was a congenital defective. These cases will not stand the strain, they go down and out very early in the game.

The following cases will illustrate fairly well the types most frequently affected: Sapper H., father living, aged seventy-four. Has not worked as long as patient can remember, is very nervous and cannot settle to work and is said to have Bright's disease. Mother died aged fifty-eight, ailing for eighteen months, very nervous, had diabetes. Had four brothers, one died young, and one died on the street, the result of an epileptic fit, had the disease for years; one fell from the frame of a ship, and was killed; one living and well. Had two sisters. One has fits, the other is very delicate. Patient had fainting spells frequently when young, generally lost consciousness. Had these same spells several times since he entered the army. Joiner by trade, but was afraid to go on a building on account of fainting spells.

The treatment of these cases is interesting and satisfactory. It is of course essential that they be taken early. Each case must be judged on its own merits. No hard and fast rule can be laid

down. The idea of injury must be removed and all influences that will contribute to that end should be employed. Mott uses the expression, the "atmosphere of cure". This, I think, conveys the method admirably. We have used the hot packs, hot baths, continuous baths, alcohol tubs and massage with very good results. Rest in bed with forced feeding is always essential. We have not found that anæsthesia has been of any service. We employed it with the case recited without any result. The patient has now regained his hearing and is quite well. He will be discharged from this hospital in a short time.

A SANITARY corps composed of two surgeons, a physician, an assistant physician, and nine orderlies, recently left Paris for Bucharest

THE sum of one million dollars has been given by the General Education Board, and an equal sum by the Rockefeller Foundation, for the organization of medical instruction at the University of Chicago.

A HOSPITAL and training school for nurses was opened at Paris on the anniversary of the death of Miss Cavell. It is called The Edith Cavell Training School for Nurses and has accommodation for one hundred patients.

THE question whether the military medical authorities have the right to impose a particular treatment on a wounded man, and whether the military authorities have the right to punish in case of his refusal to undergo a certain treatment, was discussed in the Paris Chamber of Deputies. It was urged by Dr. Gabriel Maunoury that the interests of the nation must be taken into account and that it was most important that the wounded should be cured as far as possible. A resolution was passed finally, by 354 votes against 5, to the effect that the government should be vested with authority to treat the wounded in such a way as to reconcile the rights and liberty of the individual with the general interest of the national defence, provided that all soldiers, irrespective of rank or social position, were submitted to the same treatment as regards medical or surgical measures.

Case Reports

A FOREIGN BODY IN A TUMOUR OF THE ANTERIOR ABDOMINAL WALL

By Charles K. P. Henry, M.D.

Montreal

FOREIGN bodies are occasionally found in inflammatory masses in the abdomen after extrusion or rupture from the appendix, Mechel's diverticulum, or the intestine. Rarely such are found in the wall of the abdomen after passage through some part of the alimentary canal. The following reported case is an example of how free from symptoms such a migration may be.

Mrs. McG., aged fifty-three years, was admitted to the service of Dr. Von Eberts at the Montreal General Hospital on March 22nd, 1916, complaining of several minor ailments and a mass in the anterior abdominal wall. This was first noticed about ten days before, and had caused no pain nor had it been tender. There was nothing in her history of importance and there was a total absence of any history of digestive disturbances and of abdominal pain. She had attacks of pain in her head, apparently neuralgic, unassociated with nausea or vomiting. She was found to have a pendulous abdomen and save for a tumour the size of a hen's egg, just below and external to the umbilicus, the examination of the abdomen was negative. The mass was ill defined but was clearly in the abdominal wall, attached to and moveable with the contractions of the right rectus muscle. White blood cells were 9,600, red blood cells, 6,300,000; there were no occult blood in the stools and her systems were normal. The mass was considered to be a tumour arising from the rectus sheath, likely a fibroma.

The operation by me on March 28th revealed an interesting condition. On attempting to excise the growth, it was found softer than expected and was torn through; a soft centre of inflammatory tissue was exposed and, sticking upright in this, a pointed object

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was seen which I pulled out with artery forceps. This was a fish bone, about one and a half inches long, the sharp point nearer the skin surface and lying perpendicular to the plane of the abdominal wall. The mass of inflammatory tissue was dissected free and down through the rectus sheath and muscle to the peritoneum, a portion of which I had to remove with the tumour. Underlying this piece of peritoneum was adherent omentum which had to be tied off. At no point was there any adherent bowel and no hernia existed. The abdomen was closed and the wall repaired, leaving a drain to the rectal sheath as though there was no free pus in the mass, the centre about the fish bone was soft and probably infected.

The wound closed slowly and she was discharged April 24th, one month after admission. There was no history of swallowing the fish bone and nothing during the weeks before admission suggestive of the process of extrusion of the bone and its passage from the bowel to where found.

PYOSALPINX COMPLICATING ECTOPIC GESTATION

By John R. Fraser, M.D.

Royal Victoria Hospital, Montreal

THE association of pyosalpinx with ectopic gestation is of sufficient rarity to prompt the report of the following case.

Mrs. E., aged twenty-eight, was admitted to the Royal Victoria Hospital, Montreal, in the service of Dr. Chipman, on September 5th, 1915, with the following complaints: pain and tenderness in the hypogastrium, slight bloody vaginal discharge.

The history dates back to May 15th, 1915, when she had the last period; she was well till August 29th, when she was suddenly seized with severe colicky pain in the lower abdomen and brisk vaginal hæmorrhage, With rest in bed the symptoms subsided in a few days with the exception of slight vaginal hæmorrhage. On September 4th, after being up and working about the house, she was seized with severe colicky pain in the lower abdomen, especially

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on the right side. From this time on the symptoms became progressively worse, the pain increased in severity. There was vomiting and fever.

In her previous history one notes that she had two normal pregnancies, the last five years ago and in the past three years, two abortions. There have been no other illnesses.

On admission she was found to be acutely ill with temperature 102°, pulse 132, respirations 36, and she presented all the evidences of an acute infection. The heart and lungs were normal. The abdomen was moderately distended, the lower half being fixed, the respiratory movements were confined entirely to the upper abdomen.

The flanks were not bulging, there was tenderness and muscle spasm over the lower quadrants, the uterus was palpable lying in the mid-line slightly above the pubis. It was not possible to make out the appendages because of the tenderness. Per vaginam, there was some evidence of a previous gonorrhœal infection as shown in the swelling of the Bartholinian orifices and granulation of the vaginal mucosa. The urethra and Skene's follicles were free. A little bloody vaginal discharge lay in the lower vagina. The cervix was normally placed, firm and closed, the uterus was small, anteverted, and ante-flexed, and flexed. The posterior fornix was bulging and very tender. Through the lateral fornices it was possible to make out masses on each side, on the right the mass was more or less diffuse and easily the size of a grape fruit. On the left it was more clearly defined and the size of a small orange. The urine was normal.

As her condition did not warrant immediate intervention she was treated with stimulation and kept supported in Fowler's position. The following morning there was improvement in the general condition, pulse and temperature were lower. Toward evening abdominal pain and distress aggravated her condition considerably. Locally there was more bulging of the fornices, notably the posterior, and it was thought to be possible to map out masses, on either side of the abdomen low down.

On the morning of the third day all of these signs were more marked and operation was deemed advisable. The ordinary posterior colpotomy was done first and the presence of blood in the posterior cul-de-sac verified. A laparotomy was then performed. Clear fluid escaped in considerable quantity, the pelvis was found filled with a large inflammatory mass, covered with omentum, and when this omentum was lifted off and the true nature of things

revealed, a large tubo-ovarian abscess was found on the right and a ruptured tubal pregnancy on the left.

The right tube, ovary and abscess sac were removed first, then the left tube with gestation sac. The left ovary was left behind.

The pregnancy had occurred in the ampullary portion and rupture had occurred at this point into the free peritoneal cavity. A fœtus approximating seven weeks development was found in the centre of the blood clot at the point of rupture. The uterus was removed and vaginal drainage established. Before closing the abdomen three ounces of ether were injected. The course post operative was uneventful and she left the hospital in good condition.

The case may be said to be interesting from three standpoints, the obscurity of diagnosis, its relative rarity and its etiological bearing.

The symptoms on admission, pain in the lower abdomen of severe character, temperature of 102° with a considerable degree of peritonitis, associated with the findings on examination of bilateral appendage masses with a correctly placed uterus, together with the undoubted evidence of Neisser all prompted the justifiable diagnosis of bilateral salpingo-oophoritis, with an exacerbation.

Accordingly the treatment of rest in bed, in the Fowler position, ice bag to abdomen, and stimulation, was in just accord with the well recognized treatment of salpingo-oophoritis, "watch and wait" for the so-called "cold stage".

However, the rapid increase in the size of masses, the increased bulging of the fornices, the so-called crepitations (that is, the peculiar sensation imparted to the examining finger by blood clot) with increasing degree of shock, together with the history of amenorrhœa, all prompted one to the diagnosis of a possible ruptured extra-uterine pregnancy and led to the exploratory posterior colpotomy.

In a brief survey of the literature one is impressed with the rarity of the condition. Coues, of Boston, in 1911, reported a series of two hundred and fourteen cases of ectopic gestation with a review of the literature in which he found that roughly 16 per cent. of the cases only showed evidence of disease in the opposite tube and none showed such an advanced condition as this, the majority exhibiting a mild catarrhal salpingitis or a few adhesions about the fimbriated end.

The writings of Kaufmann, Aschoff and Bilroth are in accord with the above, i.e., in the large majority of cases the presence of

catarrhal changes in the tubes at most would represent the condition found.

Perhaps the chief interest centres in the light which this case throws on the etiology of ectopic gestation. At the 1911 meeting of the American Gynæcological Association, in the discussion of Dr. Smith's paper on "Recurrent ectopic gestation", the matter of etiology was dwelt upon by Drs. Chipman, Pollak and Fry. Dr. Chipman stated that the prevading opinion of the time in regard to this matter was to recognize two great classes of causes.

1. Those due to congenital causes;
2. Those due to inflammatory causes.

In the first group one notices a fœtal type of tube with imperfect growth, a tube which has a thin wall, poor musculature, thin mucosa, with an absence of, or a weak ciliary action and ofttimes persistence of the fœtal convolutions.

In the second or inflammatory type a previous inflammation usually of mild degree has caused destruction of surface epithelium with consequent loss of ciliary action; also there may be fusion of the mucosa folds or obliteration of the proximal end of the tube.

This case very well shows the effect of inflammatory processes on the tube and bears out the above statement. It is interesting to note that even with what appears to have been a sharp infection pregnancy should have occurred at all.

A SATISFACTORY report of the work of the past year was presented at the annual meeting by the Superintendent of the MacKay Institute for the Deaf and Blind, Montreal. Instruction has been given to seventy-one pupils and remarkable progress has been made. Both the Montessori and Braille systems have been used in the instruction of pupils. The report calls attention to the great need for an institute for the feeble-minded in the province of Quebec, where both instruction and medical treatment could be given.

Editorial

THE ASSOCIATION

A MEETING of the Executive Council of the Association was held in Montreal on Monday, October 30th, for the purpose of deciding on the place and date of the general meeting of the Association to be held in 1917. Montreal was unanimously chosen as the place of meeting, and though no dates were decided upon the feeling was that the most favourable time would be about the middle of June. The actual dates are to be fixed by the Montreal members of the Executive and will be made known at the earliest possible moment. The choice of the President was also left in the hands of the Montreal members, it being the unanimous opinion of the meeting that this officer should be a Montreal physician. In this connexion due consideration was given to a letter from the President-elect, Dr. McKechnie, of Vancouver. Dr. McKechnie placed himself in this matter entirely in the hands of the Executive, expressing the hope that the first meeting after the war would be held in the West.

The Executive also took up another important matter, namely, the position of those members of the Association who have gone overseas. Many of our overseas members have discontinued their JOURNAL and it was felt that an effort should be made to retain as many of them on the list as possible. It was therefore decided that in all cases where the JOURNAL was still being delivered membership in the Association should be retained on payment of the sum of $2.00 per annum, which represents the cost of the JOURNAL to the Association. The Council feels that this step will meet with general approval.

ELECTION OF PRESIDENT FOR ANNUAL MEETING

AS indicated in the report of the meeting of the General Executive the Montreal members of the Council met recently to elect a President for the June meeting of the Association. At this meeting there also attended several members of the Executive of the Montreal Medico-Chirurgical Society, as well as representatives of the city hospitals and of the general profession.

Dr. A. D. Blackader, Acting Dean of the Medical Faculty of McGill University, was unanimously chosen President, and Dr. W. S. Morrow, President of the Medico-Chirurgical Society, Vice-President. In naming these two officers those present felt that the success of the meeting was already assured. Acting Dean Blackader has always shown great interest in the affairs of the Association and has done splendid work as Chairman of the Finance Committee since the departure of Dr. Hutchison on overseas service.

Dr. Morrow has been an active member of the Medico-Chirurgical Society for many years and has contributed frequently to the JOURNAL.

The President has already named his Committee of Arrangements, and will at once commence the work of planning what is hoped will be a most successful meeting. The dates decided upon are June 13th, 14th and 15th.

This is a matter which concerns every member of the profession in Canada and the President bespeaks the hearty coöperation of all those who have the interest of the Association at heart. Let us have a banner meeting in spite of the difficulties under which we are working.

THE CANADIAN MEDICAL SERVICES

THERE has been recently published in the Canadian Press a series of articles purporting to be based upon extracts from a confidential report upon the Medical Services of the Canadian Expeditionary Force; and these have been made the

basis of a severe criticism upon the administration of that service. So representative of all branches of the profession has been the personnel of the Canadian Medical Services overseas, and so excellent have been the reports which have reached us of their work, that considerable surprise has been caused by the bitterness of this newspaper attack, particularly upon the head of the military services.

The medical profession of Canada has reason to be proud of the way in which the Medical Service had been gradually developed in the years preceding the war, and of the relative preparedness of the Medical Services at the outbreak of the war, due in no small measure to the enthusiasm and the ability of its director, Surgeon-General G. C. Jones. This feeling of pride has been strengthened by the efficient way in which his administration has coped with the numerous difficulties which beset his path in keeping pace with the remarkably rapid expansion of the Expeditionary Force.

We are relieved to learn in the last few days that the report of his deposition and of a change in the administration was premature, and that he has resumed his duties in London. It cannot but be felt that a great injustice has been done by the widespread publication of this confidential report, not only to him, but to the whole medical profession, and more particularly to its worthy representatives who have gone overseas.

It is only natural that in such a great undertaking as the rapid organisation of such a service, many mistakes should have occurred, but these should not cause us to lose sight of the value of the work that has been accomplished.

It is not our purpose at this time to dilate upon the various items forming the basis of the criticism, nor to enter into an enquiry into the arguments which might be raised in defence of the administration, which has been attacked. Nevertheless, the moment is opportune to touch upon one point which has been raised, namely, the large number of men who have been passed as fit by medical practitioners, and

who have possessed disabilities necessitating their discharge at a later date. While medical practitioners are undoubtedly greatly to be blamed for this state of affairs, there is much to be said in their extenuation. The competitive system of enlistment and the rivalry of recruiting and commanding officers in raising regiments in a short space of time, have had much to do with the enlistment of men who are medically unfit for the services demanded of them. Medical officers have allowed themselves to be overruled by the desire of the commanding officers to bring their regiments rapidly up to strength, losing sight of the fact that these unfits constitute a great charge upon the public. If the mistakes of the past and a grave waste of public funds are to be avoided in the future, the medical practitioner must put a higher value on the signature that he attaches to a certificate of medical fitness than he has done hitherto. And let it be pointed out here that it has been the medical practitioner rather than the members of the Army Medical Corps who has been to blame in this matter.

MEDICAL RESEARCH AND THE WAR

WE, in Canada, are apt to take the inhabitants of the little old British Isles, and more particularly the English, at their own valuation, and as it is the habit of the British to run themselves down, and of their press to deplore the want of energy of the inhabitants of the said isles, so are we apt to picture Great Britain as deplorably behind the times, and until a few weeks ago, when the "Tanks" woke an astonished world to British resourcefulness and ingenuity, not all the feats quietly and effectively performed by the British navy, or the wonderful fight put up by the "contemptible" little Army could quite remove from the Canadian mind that the Old Country was woefully behind the times.

But without advertising itself, that British Army Medical Corps has accomplished wonders, and one of those wonders it is, quietly performed, that deserves

more recognition than has hitherto been accorded. In civil life we of the profession are accustomed to weigh and estimate a medical institution or community, not by the fees it secures or the number of operations successfully performed, but by the extent of its contributions to medical advance. Judged thus, the hospital that is not attached to a medical school occupies a position inferior to one that is so attached, and the institution or school that merely teaches is regarded as inferior to one which possesses live laboratories conducting researches. It is true that the care of the patient and his treatment is the first object to be kept in mind in every medical institution, but experience has abundantly demonstrated that the greatest care and the best results are achieved where men are most alive to the problems of disease, and most keen to accomplish the solution of the same. The same principle holds true in connexion with the Army Medical Service.

It will be remembered that when the Old Country some few years ago was basking in what appeared to be universal peace, that most active Radical, Lloyd George, sprang upon the medical profession his Insurance Act, to the profound indignation of the greater part of the profession, who suddenly without even "by your leave" found themselves converted into panel doctors and civil servants. As a placebo Lloyd George introduced into his Act a section which placed a portion of the insurance monies at the disposal of the profession for purposes of research. The sum allotted annually was more then $250,000 and the researches, it was directed, were to be more particularly into those conditions which are most liable to affect the bulk of the people. Tuberculosis, for example; rheumatoid states, exanthemata, occupational diseases, etc. Sir J. Clifford Albutt, Sir William Osler, Sir Almroth Wright, Professor Sterling and other leaders in medical research were nominated upon a Medical Research Committee, and endeavours were made to establish a central research institute. Further, special investigations were subsidized in the different universities and other medical centres.

The scheme had been in operation scarce a year when the War broke out; then patriotically and with foresight, the Research Committee decided that for the duration of the War its income should be devoted to carrying on investigations and work in connexion with diseases amongst the troops.

The result has been very striking. No serious problem presents itself but forthwith the Research Committee gives assistance towards the solution of that problem, in this working hand in hand with the D.G.A.M.S., Sir Alfred Keogh. When, for example, cerebro-spinal fever started to become epidemic amongst the troops in Great Britain the Committee gave grants to bacteriologists in various centres to make thorough investigations. In their researches upon the proper treatment of wounds, both Lorrain Smith and his associates in Edinburgh, and Dakin working with Carrel in France, were working under the auspices of the Research Committee, as also has been Sir Almroth Wright's laboratory in France. The work of the late Professor Brodie in association with Professor J. J. Mackenzie upon the analysis of the respiratory gases in cases of chest wounds was supported by a grant from the same Committee, who have shown their willingness to support investigations by Canadians and capable men from all parts of the Empire.

The report of this Committee, published a few months ago, of the work accomplished during the year 1915, is a most striking document as indicating the wide scope of investigations conducted, thanks to the help furnished from this insurance fund.

Nor does this include all its activities. The War Office has placed in the hands of the Committee the compilation of the casualty statistics of the War, and a large staff is now engaged in the British Museum under one of the foremost statisticians in Europe—Dr. Brownlee—collecting these statistics, not merely of the British troops only, but of the Expeditionary Forces from all the Dominions, and that at a cost now that exceeds $100,000 a year.

Add to this that apart from the work of the Research Committee, many of the leading pathologists and bacteriologists of the Empire are in charge of the laboratories of the different Base Hospitals overseas, and in addition to performing the enormous amount of routine work the best of these men find time to undertake researches of the first order. The majority of these are published in the journal of the Royal Army Medical Corps. That journal alone affords proof that the work now being done in the mobile laboratories, and the laboratories of the Base Hospitals and of the Royal Army Medical College, Millbank, is of the very first order. The results obtained in more exact diagnosis, and improved treatment, places the British Army Medical Service in a position in which it is not excelled by any other Army Medical Service in the field.

INFANTILE PARALYSIS

THE epidemic of anterior poliomyelitis which appeared in Montreal during the second week of October, whilst it fortunately did not attain to large proportions numerically, presented some interesting features. Coming at a time when there was, so far as one can glean from reports, hardly more than the usual number of sporadic cases, it seemed suddenly to reach its maximum. A poll taken at a meeting of the Montreal Medico-Chirurgical Society on October 20th showed that the members present had seen sixty cases of the disease in the period of two weeks previous to the meeting, and by far the greater part of these were from that portion of the city where the best hygienic and social conditions prevail. As many of the recognized cases were fatal and as wide publicity was given to the fact by the daily press, the public became thoroughly alarmed and readily adopted all suggestions regarding prevention. Sunday schools, public and private schools, and all children's gatherings were discontinued in the section of the city principally affected, with the result

that by the first of November the number of cases reported had dropped to about the normal.

While there is so wide a disparity in the opinion of competent physicians regarding the etiology and mode of transmission of this disease, it will be wise to accept, for the present and until the matter has been further elucidated, the statement issued by the American Public Health Association as authoritative. At the meeting, held at Cincinnatti in October, a committee composed of Dr. Haven Emerson, Commissioner of Health, New York City, Assistant Surgeon Wade Frost, United States Public Health Service, and Dr. A. J. Chesley, Epidemiologist, Minnesota State Board of Health, drew up a report which was accepted by the Association as an authoritative expression of their opinion. Briefly stated, the finding of the committee is as follows: The specific cause of infantile paralysis is a microörganism which has not yet been positively identified. It is present in the nervous tissues, and also in the nose, mouth, and bowel discharges of persons suffering from the disease, and healthy associates of such persons may harbour the virus in their noses and throats and thus act as carriers of infection. The incubation period has not been definitely established, but is less than two weeks and in the great majority of cases between three and eight days. Effective preventive measures, approaching complete control, are impracticable, because isolation of recognized cases of the disease and restraint upon their immediate associates must fail to prevent the spread of infection by unrecognized cases and carriers. Of first importance is the more general recognition of the non-paralytic cases through clinical observation and laboratory procedures, and in this connexion lumbar puncture is recommended as offering valuable aid in diagnosis, and also in affording symptomatic relief as a therapeutic procedure. The measures recommended for controlling the disease are practically the same as those adopted in scarlet fever; namely, reporting all suspected cases; isolation of patients for six weeks; disinfec-

tion of all body discharges; restriction of the movements of intimate associates of the patient; protection of the children so far as possible from contact with other children or with the general public during epidemics; and observation of contacts for two weeks after last exposure.

An extremely interesting feature of the Montreal epidemic and one that has been noted in other cities, was the rapid appearance over a wide area of severe and fatal cases of the disease in which it was impossible to trace the source of infection unless through some common carrier such as food. It is difficult to provide an adequate explanation of such a phenomenon, but it is quite possible that the earlier cases in a community are of the milder and non-paralytic type, and as such go unrecognized, and when the severe and easily diagnosed cases appear, the infection has become widespread. Clinically, the epidemic type of poliomyelitis is very unlike the sporadic type. The latter is rarely fatal and when death does occur it is due to paralysis of the respiratory muscles, much as in death from post-diphtheritic paralysis. In the epidemic type, on the other hand, quite a proportion of the fatal cases succumb before the appearance of the paralysis from hyperpyrexia associated with a general toxæmia. So, too, the more unusual types of the disease, such as the encephalic, meningitic and bulbar forms, seem to provide a much larger proportion of the cases during an epidemic. It is to be hoped that the immense amount of study that has been possible on account of the proportions of the present North American epidemic will result in a more thorough knowledge of the disease and in the devising of means for controlling it.

THE question of expert medical evidence was brought up by Dr. Wilfrid Derome in an address before the Montreal Chamber of Commerce. This matter was discussed in the January, 1913, number of the JOURNAL, page 49, when some of the objections to the present arrangement were mentioned and recommendation was made of the appointment of physi-

cians as "experts", who in medico-legal cases would investigate the medical aspects of the case and submit an impartial report to the judge before the trial, thus avoiding the conflicting reports so often made under the present system by physicians engaged by the two parties concerned. At the close of Dr. Derome's address, the Chamber of Commerce decided to bring the matter to the notice of the Provincial Legislature.

THE present cost of milk in Toronto was discussed at the annual meeting of the Tax Reduction Association, when an address was delivered by Dr. J. B. Fraser in which he drew a comparison between the germ and the bio-chemical theory of the causation of disease. Dr. Fraser stated that in Toronto, where it is illegal to sell other than pasteurized milk, the mortality among children is 29 per cent. higher than in London, England, where unpasteurized milk is sold. He thought that people should be allowed to purchase the latter if they wished to do so. In the discussion which followed Dr. Fraser's address, reference was made to the cost of delivering milk. It was thought the cost of milk might be reduced if dairies were owned by the municipality, as much overlapping in its delivery could then be avoided. A resolution was passed requesting the Board of Health to modify the present by-laws to permit of the sale of "raw" or unpasteurized milk.

THE addition to the Naval Hospital at Chatham, England, given by the women of Canada was opened by His Royal Highness the Duke of Connaught on November 24th. It will be remembered that soon after the outbreak of war the sum of fifty thousand dollars was offered to the Admiralty by Canadian women through Her Royal Highness the Duchess of Connaught, for the purpose of providing a hospital ship. The Admiralty, however, considered that the money could be employed to better advantage in providing additional accom-

modation at the Haslar Hospital. Since then the fund has increased to forty thousand pounds which has been spent upon a new wing at the Chatham hospital. The Canadian Coat-of-Arms is emblazoned upon the outside of the building, and underneath it one reads the following inscription: "In love and loyalty to our King and Empire and undying gratitude to the brave men who are fighting in vindication of our honour."

THE recognition of the fact that a large number of soldiers have been recruited in Canada who, upon arrival in England, have been found unfit for service, has led to a change in the regulations governing the medical examination of recruits. In future each man, after being passed by a medical officer, will be sent to a mobilization centre where he will undergo a second examination by a board of three practitioners. Whether accepted or rejected by this board, he will be paid for the time spent in undergoing the examination and travelling to and from the centre of examination.

A CONFERENCE of representatives of the Ontario Government, the Military Hospitals Commission, and the Soldiers' Aid Commission took place at Toronto on November 7th, when the question of providing accommodation for tuberculous soldiers was considered. Representatives of municipalities were also present on this occasion. Arrangements have been made to provide accommodation for one hundred and thirty tuberculous soldiers at Hamilton, partly in the new building erected by the Health Association, which is nearing completion, and partly in other buildings which are to be put up by the Government on the Association grounds. It is the intention also to put up a building which will be devoted to vocational training. When the new buildings are no longer required for the treatment of soldiers, they will be given over to the Health Association. A grant of $25,000 has been made by the City Council of London, Ontario, towards the cost of

a permanent hospital for soldiers suffering from tuberculosis. The Ontario Government and the Military Hospitals Commission have also each contributed $25,000 to this hospital. The sanatorium at Freeport has also been handed over to the Hospitals Commission by the Kitchener City Council for a period of one year.

ARRANGEMENTS have been made with the Intercolonial and Canadian Pacific Railways for the provision of hospital trains to bring wounded soldiers from Halifax, upon their arrival from England, to Montreal, Toronto, Winnipeg and Vancouver. The trains are being built on the same plans as the British military hospital trains, but of course adapted to the larger Canadian cars. They will be marked with the Red Cross on the outside and fitted with hospital beds, surgeries, and accommodation for doctors and nurses. There are in England at the present time about twenty thousand wounded Canadians and it is expected that about two hundred and fifty will leave for Canada each week. The provision of accommodation and treatment for these men is in the hands of the Military Hospitals Commission and under the immediate direction of Lieutenant-Colonel Alfred Thompson, M.P., chief medical officer of the Commission. Several buildings have been converted already into hospitals. The new asylum at Whitby has been taken over temporarily by the Commission and accommodation has thus been provided for six hundred patients, which when all the buildings are finished will be doubled. The Strathcona Hospital at Edmonton has also been taken over by the Commission and provides accommodation for one hundred and fifty patients. In Montreal the old Loyola College building is being equipped to take in from two hundred to two hundred and fifty soldiers and further room has been secured at the Grey Nunnery.

Canadian Medical Association

THE MEETING IN JUNE IN MONTREAL

THE Executive Council of the Canadian Medical Association has decided that for many reasons an effort should be made next year to resume the annual meetings and has asked the profession in Montreal to take charge of the arrangements.

The last meeting took place in 1914 and was held in St. John. The meeting for 1915 was to have been held in Vancouver under the presidency of Dr. McKechnie, but under the stress of war conditions at the time, the Executive thought it wiser that no meeting should be held that year. This year also has been allowed to pass without any general gathering, but at a meeting held at the end of last month it was the general opinion that an effort should be made and that the Association should meet again in June of next year.

The War clouds still hang heavily over all. Many of our confrères are at the front doing heroic work. Those of us at home have many added burdens; nevertheless, all will, we are sure, respond loyally to the call of duty. We all recognize the valuable work being done by the American Medical Association in uniting in a common bond the members of the profession in the various states of the Union. Our Canadian Medical Association has a similarly high ideal. The profession in Montreal will do everything in its power to arrange an excellent and interesting programme, but solicit the assistance of members from all parts of the country in making the meeting a success. The date of meeting has been fixed for the 13th, 14th and 15th of June.

We hope as many members of our profession as possible will arrange to be present and will signify their intention of doing so early so that comfortable arrangements for their accommodation can be made. We will also be glad if members will transmit to the General Secretary, in Montreal, at as early a date as possible, the title of any paper they may desire to present.

A. D. BLACKADER,
President.

Miscellany

Book Reviews

TREATISE ON FRACTURES. By JOHN B. ROBERTS, A.M., M.D., F.A.C.S., professor of surgery in the Philadelphia Polyclinic and College for graduates in medicine; and JAMES A. KELLY, A.M., M.D., attending surgeon to St. Joseph's, St. Mary's, and St. Timothy's hospitals. 677 pages with 909 illustrations, radiographs, drawings and photographs. Philadelphia and London: J. B. Lippincott Company, 1916.

Anyone who knows Dr. John B. Roberts knows that whatever he does he does well, carefully and conscientiously. A perusal of the pages of the Treatise on Fractures by Roberts and Kelly enhances the above estimate. Each fracture is most clearly described and illustrated. And not only what may be called normal fractures, but the complications and more frequently associated injuries.

The drawings, radiograms, photographs and illustrations of apparatus are exceedingly clear. We can promise for this volume a generous reception by the profession and by medical students.

A TEXT-BOOK OF FRACTURES AND DISLOCATIONS, WITH SPECIAL REFERENCE TO THEIR PATHOLOGY, DIAGNOSIS AND TREATMENT. By KELLOGG SPEED, S.B., M.D., F.A.C.S., associate in surgery, Northwestern University Medical School. 888 pages, with 656 engravings. Publishers: Lea & Febiger, Philadelphia and New, York, 1916. Price $6.00 net.

Text-books devoted exclusively to fractures or to fractures and dislocations emphasize not only the importance of the subject but the advances made during the past decade. The author rightly devotes a good deal of space to the pathology of fractures and of bone repair, a basic knowledge of which is necessary for diagnosis, prognosis and treatment. The different fractures and dislocations are explained in clear language, and the illustrations are numerous, clear and illuminating. The principles of treatment are sound and the details of carrying out the principle are lucidly expressed.

Literature is freely drawn upon. It is noteworthy that Whitman's ideas and methods of treating fracture of the neck of the femur do not receive very special attention from the author.

Nail extension receives favourable comment although the dangers of infection are mentioned.

The open treatment of fractures is discussed in a judicial and conservative tone.

The volume has evidently been prepared with great care and it is to be commended.

Obituary

Dr. John Mackenzie, of Mulgrave, Nova Scotia, died October 29th. Born of Scottish parentage in the year 1860 at Boulardarie, Cape Breton, Dr. Mackenzie obtained his medical degree at Dalhousie University in 1884 and shortly afterwards began to practise at Mulgrave. His untiring devotion in the performance of his professional duties made him beloved and respected throughout the district.

Dr. F. Whybra died at Prince Albert, Saskatchewan, on October 30th, in the forty-sixth year of his age. Dr. Whybra was born at Niagara Falls and practised for some years at Stevensville, Ontario.

Dr. James Henry died October 30th at Orangeville, Ontario, where he had been in practice for fifty-three years. Dr. Henry was in the seventy-fourth year of his age. He was the son of the late Dr. Thomas Henry and was born at Sandhill, Ontario. He graduated from the University of Toronto in 1863 and at once went into practice at Orangeville. Dr. Henry was a member of the Ontario Medical Council for twenty-five years and for some time was surgeon to the 36th Regiment, retiring with the military rank of Lieutenant-Colonel. He was coroner for the counties of Dufferin, Grey, Peel, and Wellington and upon five occasions was elected mayor of Orangeville.

Dr. Thomas Masson, of Cape Vincent, New York, died October 26th. Dr. Masson was born at Seymour, Northumberland

County, Ontario, in 1851, and graduated from Queen's University in 1871. He had been in practice at Cape Vincent since 1875.

Dr. J. J. Mullin died at Montreal on September 28th, in the thirty-ninth year of his age. Dr. Mullin graduated from McGill University in 1906 and was in practice at Victoria for a few years, but the state of his health obliged him to give up professional work.

Dr. J. W. McMeekin, who died at Saginaw, Michigan, was born in 1859 and graduated from McGill University in 1885. He had been in practice at Saginaw for some years.

Dr. Charles Peter Bissett died at Arichat, Nova Scotia, on November 19th. He was born at River Bourgeois in June, 1866, and was the ninth son of George H. Bissett, who is still living at the age of ninety. Dr. Bissett graduated as gold medallist from McGill University in 1890. He practised at St. Peters, Nova Scotia, and for eleven years was representative of the Liberal party of Richmond County in the provincial House of Assembly.

Dr Thomas P. McDonald, whose death recently occurred in South Africa was in the forty-eighth year of his age. He was born in Ontario and graduated from the University of Pennsylvania in 1891. After doing some postgraduate work in England, he returned to Canada and practised for a time at Barrie. From there he went to San Francisco and later returned to England, taking up a practice at Peel in the Isle of Man. He was unable to stay there, however, on account of his health and went to South Africa in the hope that the change of climate might restore him.

Dr. Alexander Beith died suddenly on November 10th at Bowmanville, Ontario, where he had been in practice since 1866. He was born in Darlington Township, Ontario, on December 10th, 1840, of Scotch parentage, and took his medical degree at Toronto University. During the sixty years of his professional work in Bowmanville, he had won the respect of the whole community and his death is greatly regretted.

Dr. Marshall Sutton, of Cooksville, Ontario, died suddenly November 23rd, in the sixty-sixth year of his age. Dr. Sutton was born at Clandeboye, Ontario. He attended the Guelph High School and then taught for a time before entering the medical faculty of the

University of Toronto, where he received his degree in 1877. He afterwards did some postgraduate work in London and Edinburgh. He resided for a time in North Dakota and had been in practice in Cooksville for the past twenty-three years.

DR. FRANCIS L. HOWLAND, of Huntsville, Ontario, died November 8th. Dr. Howland was born at Whitby, Ontario, and graduated in medicine with honours from McGill University in 1867. He practised for a short time at Woodstock and in 1875 went to Huntsville, which was then only a small village. In addition to his professional work, Dr. Howland became the editor of *The Liberal*, which later became known as *The Forester*. He also took an active part in politics. About fifteen years ago he established the Huntsville General Hospital, an institution which was closed a few years ago when the Government grant was withdrawn.

News

MARITIME PROVINCES

THE sum of $5,000 has been offered by Mr. C. C. Blackader, proprietor of the *Acadian Recorder*, towards a fund for the erection of a hospital in Halifax for the treatment of advanced cases of tuberculosis.

ONTARIO

THE annual meeting of the Ontario Medical Association will take place at Toronto from May 31st to June 2nd, next.

The twenty-first annual meeting of the Kitchener-Waterloo General Hospital was held on October 16th. It was reported that during the year under consideration 935 patients had been admitted to the institution and 940 had been discharged, and that 60 deaths and 71 births had occurred.

THE report for the year ending September 30th, 1916, presented to the directors of the Protestant General Hospital, Ottawa, shows that the cost of maintenance has increased by $8,000 during the year, due partly to the advanced price of medical supplies. The number of patients treated was 2,944 including a number of soldiers. Forty-six thousand days of treatment were given.

A DENTAL clinic has been established in connexion with the public schools of Hamilton.

CAPTAIN MURRAY PATERSON, C.A.M.C., of Chatham, Ontario, was the guest of honour at a banquet given by the Canadian Club on the occasion of his return to the front after a month's furlough. Captain Paterson has been recuperating from the effect of wounds which he received through going into "No Man's Land" to the rescue of a wounded comrade. His bravery on this occasion was rewarded by the Military Cross which was conferred upon him by His Majesty the King.

THE death of Mr. Leon Maguire recently occurred at the Wellesley Hospital, Toronto, from paratyphoid fever which, it is stated, was contracted through eating celery. Four other persons, who also partook of the celery, are seriously ill.

DR. R. E. DAVIS has been appointed medical officer of health of Shelburne in succession to Dr. J. A. Smith, who has resigned.

AT the twenty-second annual meeting of the Ottawa Maternity Hospital, it was reported that the wards had been filled throughout the year and that 576 patients had been admitted to the institution as compared with 527 during the previous twelve months. The number of births was 544. The death of patients admitted to the hospital occurred in four instances.

THE Toronto Orthopædic Hospital was reopened on November 16th. It has been enlarged and now has a capacity of forty beds.

APPLICATION is to be made to the Ontario Government for an increase in the grants to hospitals, on the ground that the amounts now received are inadequate in view of the high cost of maintenance and the amount of free treatment given to soldiers and their families.

THE Brantford Hospital has increased its charges to patients from outside districts from seventy cents to one dollar a day.

QUEBEC

THE following information is taken from the report of the Bureau of Statistics of the Province of Quebec for the year 1915. There are in the province five hospitals for the insane, the admissions

to which during the year numbered 1,236—rather less than during the previous year, when 1,325 admissions were made. On December 31st, 1915, there were 5,074 patients in the asylums of the province. The patients admitted to the forty-nine hospitals and six sanatoria in the province numbered 41,755, an increase over the 30,396 admitted during the previous year. The prisoners admitted to the various penitentiaries, of which there are twenty-seven, numbered 9,030 as compared with 11,328 in 1914. Four hundred and seventy-two juvenile delinquents were sent to corrective institutions and 2,132 admissions were made to industrial schools. In 1914, the juvenile delinquents admitted to institutions were to the number of 438, and the admissions to industrial schools 1,340.

A REPORT has been submitted to the provincial government by the Superintendent of the Protestant Hospital for the Insane, Verdun, in which the need for more accommodation at the hospital is pointed out. At present there are 761 patients in the institution, which is sixty more than the building is intended to accommodate.

MANITOBA

A MEETING of the provincial board of health took place on November 16th, when it was decided that all dairies in the province of two or more cows should be licensed and inspected regularly; that the use of hydrocyanic acid as a verminicide should be prohibited, as several deaths have occurred in the province as a result of the use of this acid; and that the common drinking cup and roller towel should be abolished. It was decided to recommend that the use of basements as residences or for manufacturing purposes, except under very stringent conditions, should be made illegal. It was recommended also that the staff of public health nurses be increased, and approval was expressed of the inspection of dairies, creameries, cheese factories, slaughter houses, butcher shops, meat and milk supply. It was resolved that more active measures be taken to prevent infant mortality, especially in the frontier settlements, and that further steps be taken to educate the people by means of lectures and addresses. The question of the sanitary inspection of hotels, lodging houses boarding houses and restaurants will be considered at a special meeting to be called in the near future.

BRITISH COLUMBIA

THE cornerstone of the new Kootenay Lake General Hospital was laid on October 21st by Mr. William Astley of Vancouver. When completed the new building will contain accommodation for sixty-four patients.

DR. EDWARD HASELL, who recently retired from the office of medical superintendent of the Provincial Royal Jubilee Hospital, Victoria, has been appointed medical superintendent of military hospitals in District No. 11.

MEDICAL COLLEGES

Toronto University

LIEUTENANT GORDON WILSON CROW, whose death occurred in action on September 22nd, was a student in the medical faculty of the University. He had distinguished himself for bravery on more than one occasion and had won the Military Cross at the battle of Ypres on June 2nd and 3rd.

Queen's University

THE summer session given by the medical faculty of Queen's University has enabled the following students, fifty-six in number, to complete their medical studies and to obtain their degree. Most of these graduates will offer themselves at once for overseas service with the Canadian or the Royal Army Medical Corps.

Degree of M.B.: L. N. Armstrong, Kingston; H. M. Barnes, B.A., Gananoque; W. J. D. Black, Kingston; O. K. Blackett, Port of Spain, Trinidad, B.W.I.; J. P. Bonfield, Ottawa; H. A. Boyce, Harrowsmith; Bruce Cannon, B.A., Kingston; J. M. Clark, Scugog; G. H. T. Clarke, Manzanilla, Trinidad, B.W.I.; C. B. Corbett, Ottawa; R. F. Davidson, Toronto; J. R. Davies, Vancouver, B.C.; W. P. Downes, B.A., Hamilton; J. H. Fraser, B.A.; Dalkeith; C. D. Gallagher, Kingston; Chilvers Gooch, Brooking, Sask.; E. J. Gordon, Highgate; Harry Hedden, Dunnville; R. K. Johnstone, Inverary; A. L. Leatherbarrow, Hampton Station, N.B.; W. H. Lloyd, Kingston; Benjamin Lyon, Kingston; J. O. MacDonald, B.Sc., Strathroy; P. M. MacDonell, M.A., Kingston; H. G. MacFarlane, Ridgetown; E. C. Mick, Powassan; G. F. McFadden, B.A.; Sudbury; B. T. McGhie, Kingston; A. G. McGhie, Kingston; W. W. McKay, Pembroke; H. R. Nicklin, Newton; E. W. Nolan,

Toronto; F. A. O'Reilly, Wolfe Island; C. A. Palmer, St. Ann's Bay, Jamaica, B.W.I.; J. R. Patterson, Peterboro'; J. E. Power, Duluth, Minn.; F. L. Reid, Kingston; W. G. Robertson, Renfrew; J. P. Sweeney, Charlottetown, P.E.I.; A. J. Tripp, Fitzroy Harbor; R. J. Tucker, Paisley; J. B. Willoughby, Llyndhurst; J. A. Young, B.A., Griswold, Man.

Degree of M.D., C.M.: E. J. Brennan, M.B., North Bay; T. F. Cartar, M.B., San Fernando, Trinidad, B.W.I.; W. T. Case, M.B., Georgetown, British Guiana; E. C. A. Crawford, Melville, Sask.; G. F. Denyes, Odessa; D. R. Fletcher, Ceylon; W. R. Grant, M.B., Sintaluta, Sask.; G. H. Johnston, B.A., Cataraqui; J. E. Kane, M. B., Kingston; J. A. Labelle, M.B., Ottawa; G. F. Laughlin, Point Anne; H. M. MacDonald, M.B., Owen Sound; D. K. F. Mundell, Kingston; W. C. Page, B.A., Kingston; G. S. Purvis, Viking, Alta.; C. M. Sellery, B.A., Cobourg; K. M. Shorey, Napanee; G. F. Sills, Tweed; L. D. Stevenson, B.A., Dunfermline, Scotland; A. B. Whytock, B.A., Madoc.

Medal in Medicine: Henry Hedden, Dunnville; A. B. Whytock, Madoc.

Medal in Surgery: K. M. Shorey, Napanee.

ARMY MEDICAL SERVICES

Lieutenant-Colonel F. G. Finley, C.A.M.C., of Montreal, has been appointed consulting physician to the Canadian hospitals in England. Lieutenant-Colonel Finley went overseas with the first Canadian Division as chief medical officer of No. 1 Canadian General Hospital.

The Silver Medal of La Société de Secours aux Blessés Militaires (French Red Cross) has been awarded to Dr. Charles Valery of Edmonton, who is now in charge of a military hospital in Paris. Dr. Valery received the French War Cross some time ago for conspicuous bravery under enemy fire.

The Distinguished Service Order has been conferred upon Lieutenant-Colonel Harry Melville Jacques, C.A.M.C., who "supervised the clearing of the front and controlled the work of the advance and main dressing station with great skill and personal courage." Lieutenant-Colonel Jacques graduated from McGill University in 1894 and before enlisting with the Canadian Army Medical Corps was in practice in Halifax.

THE Military Cross has been conferred upon the following Canadians: Captain H. H. Argue, C.A.M.C., of Toronto, "who attended and dressed the wounded under heavy fire, displaying great courage and determination." Captain Argue was assistant superintendent of the Toronto General Hospital and received his commission in the Canadian Army Medical Corps on April 26th, 1915. Captain Felton, C.A.M.C., of Snooke, British Columbia. Captain William Brown, C.A.M.C., who "attended and dressed the wounded for forty-eight hours under heavy fire, displaying great courage and determination." Captain A. H. Taylor, C.A.M.C., medical officer of the 24th Battalion, Victoria Rifles, and son of Dr. Taylor of Goderich, Ontario. In reference to Captain Taylor, Colonel Gunn, commanding officer of the battalion, writes: "During a bitter engagement a lieutenant of the battalion had his leg shot away and was unable to be moved. Captain Taylor, alone, left his station and in the face of a heavy barrage fire went out and dressed the wound, enabling the wounded officer to be brought in." Captain Taylor graduated from the University of Toronto in 1910 and before enlistment was medical superintendent of the Calgary General Hospital.

THE Military Cross has also been awarded for conspicuous bravery to Captain John R. Christian, R.A.M.C., of Edmonton, and to Captain Clarence Young, R.A.M.C. Captain Young is the son of Mr. William Young, of Guelph, Ontario, and is twenty-seven years of age. He was surgeon to the western section of the Grand Trunk Pacific Railway and joined the R.A.M.C. last spring. His brother, Captain Ernest Young, C.A.M.C., is on the staff of the Western University Military Hospital

THE Military Medal has been awarded to Captain George Miles, C.A.M.C., of Toronto. Captain Miles has been on active service since the commencement of the war. Another recipient of the Military Medal is Sergeant Horace May Gillmor, C.A.M.C. Sergeant Gillmor was studying medicine at McGill University when he joined the 6th Field Ambulance in the Spring of 1915. He is a son of Senator Gillmor, of Westmount, Montreal.

DR. GORDON G. MALCOLM, of Lac de Bonnet, Manitoba, has joined the staff of a field ambulance for overseas service. Dr. Malcolm is a graduate of the University of Toronto.

CAPTAIN D. J. MACKAY, C.A.M.C., who recently returned from England, has been appointed medical officer of the 118th Waterloo Battalion. Captain Austin D. Irvine, C.A.M.C., of Montreal, has been appointed medical officer of the 245th Overseas Battalion, Canadian Grenadier Guards. Dr. Irvine graduated from McGill University in 1896. Captain L. T. Ainley, C.A.M.C., is the medical officer of the 222nd Battalion.

THE following have joined the Canadian Army Medical Corps: Dr. McCue, of Walkerton, Ontario; Dr. L. V. Turrill, of Outlook, Saskatchewan.

DR. J. S. MATHESON, of Brandon, Manitoba, has left for overseas service.

THE direction of recruiting amongst the French Canadians in all parts of the Dominion has been placed in the hands of Colonel Arthur Mignault, C.A.M.C., of Montreal, who recently returned from France.

LIEUTENANT-COLONEL C. W. ROWLEY of the Military Hospitals Commission has been made an Esquire of the Order of the Hospital of St. John of Jerusalem.

THE following promotions in the Canadian Army Medical Corps have been gazetted: To be Majors: Captains S. M. Polson, Garfield Platt, and W. H. Ballantyne, of Queen's Military Hospital.

THE following Lieutenants in the Canadian Army Medical Corps have been gazetted temporary Lieutenants in the Royal Army Medical Corps: B. O. Kinney, G. L. Gall, M.D.; C. M. Anderson, M.D.; F. G. Pedley, M.D.; W. C. Brown, M.A.; Harrington, M.B.; J. W. McKie, M.B.; F. J. Colling, M.B.

CAPTAIN GORDON GUNN, R.A.M.C., of Edmonton, has been recommended for distinction for conspicuous bravery on the field of action.

CAPTAIN A. K. HAYWOOD, C.A.M.C., who accompanied the First Canadian Contingent as medical officer of the 3rd Battalion

(Toronto) has been given the command of a convalescent hospital in England.

LIEUTENANT-COLONEL MCKENZIE FORBES, C.A.M.C., has been appointed medical officer of the Montreal and Quebec district by the Military Hospitals Commission.

THE following have been appointed medical officers of overseas battalions: Captain E. A. McCusker, C.A.M.C., of the 5th Canadian Pioneers Battalion; Captain Henry George, C.A.M.C., of Red Deer, Alberta, of the 191st Battalion; Captain L. T. Ainley, C.A.M.C., of Wadena, Saskatchewan, of the 222nd Battalion; Captain Austin D. Irvine, C.A.M.C., of the 245th Battalion, Gernadier Guards, Montreal.

LIEUTENANT G. A. LYONS, R.A.M.C., is the medical officer of the 25th Middlesex Regiment. Lieutenant Lyons graduated from McGill University last spring.

DOCTOR R. W. CLARKE, of Bowmanville, Ontario, has been obliged to resign his position of medical officer of the 235th Battalion on account of his health and has resumed civil practice.

DOCTOR L. H. ROBERTS, of Freligsburg, Quebec, has received a commission in the Canadian Army Medical Corps.

CAPTAIN A. H. CAULFEILD, A.C.M.C., of Gravenhurst, Ontario, who has been engaged in bacteriological work for the British Admiralty, is now directing the treatment of cases of typhoid fever and cerebro-spinal meningitis at the Shorncliffe Military Hospital.

A TABLET to the memory of the late Captain Douglas Waterston C.A.M.C., was unveiled at the Melville Presbyterian Church, Westmount, Quebec, on November 19th. Captain Waterston met his death while succouring a wounded comrade on May 22nd, 1916, a few weeks after his arrival in Flanders with the 9th Field Ambulance. The memorial tablet has been placed in the Melville Church by Lieutenant-Colonel Peters, the officer commanding the unit, and other officers of the 9th Field Ambulance. Captain Waterston was buried in the British Cemetery at Reninghelst, Belgium.

LIEUTENANT-COLONEL THOMAS B. RICHARDSON, who has been in command of the Toronto Military Base Hospital, has been appointed president of the Medical Board, Toronto, and temporary command of the Base Hospital has been given to Lieutenant-Colonel Cameron A. Warren, of Toronto. The laboratories of the hospital are under the direction of Captain George D. Porter.

CAPTAIN H. B. PAUL has been appointed commanding officer of the new Canadian hospital at Otchingill, near Shorncliffe.

CASUALTIES

Killed in Action

CAPTAIN R. E. HORKINS, R.A.M.C., whose death occurred in action on the Somme front, was the son of Mr. T. J. Horkins, of Campbellford, Ontario. He graduated from the University of Toronto in 1912 and became house surgeon at St.Michael's Hospital, Toronto. He joined the R.A.M.C. shortly after the outbreak of war and upon arrival in England was attached to the Royal Irish Fusiliers and later to the 75th Howitzer Brigade. He had been in the trenches for ten months when he met with his death. In Toronto Captain Horkins was well known as a Lacrosse and Rugby player.

CAPTAIN FRANCIS SHARPE WALCOTT, C.A.M.C., who was killed in action on October 6th, last, took his medical degree at McGill University in 1915.

Accidental Death

THE death of Major Herbert George Bowlby, C.A.M.C., occurred at Seaford, England. Major Bowlby was the A.D.M.S. of the Canadian medical forces in the Shoreham area and had been overseas for eighteen months. He was in practice at Kitchener, Ontario, and had twice been elected mayor of that city. His death was due to an accident, when he missed his footing and fell over the cliffs at Seaford.

Died

CAPTAIN W. A. HENDERSON, C.A.M.C., died suddenly at Sarnia Ontario, on October 25th. Captain Henderson returned from the front about a month before he died.

Wounded

CAPTAIN J. A. CALLUM, C.A.M.C., of Regina.
CAPTAIN P. POISSON, C.A.M.C.
CAPTAIN W. L. HUTTON, C.A.M.C.

Canadian Literature

ORIGINAL CONTRIBUTIONS

The Canada Lancet, July, 1916:

Ontario Medical Association. Presidential address	H. B. Anderson.
Relative merits of the steel plate and of the autogenous bone graft, in the operative treatment of simple fractures	E. R. Secord.

The Western Medical News, July, 1916:

Cæsarean section	J. W. Turnbull.
A case of double female genitalia	H. MacLean.
A note on dysenteric arthritis	T. G. Moorhead.

The Public Health Journal, July, 1916:

Alcohol from the public health standpoint	J. W. S. McCullough.
The attitude of the psychiatrist towards alcoholism as a cause of insanity	C. K. Clarke.
The Royal Institute of Public Health	A. Corbett Smith.
The mother in industry	J. Martin.
Hygiene in Winnipeg in the early seventies	E. Marston.

L'Union Médicale du Canada, July, 1916:

De l'expertise médicale et du choix des médecins experts dans la province de Québec	G. Villeneuve.

The Public Health Journal, August, 1916:

Tuberculosis in relation to feebleminded-ness	P. H. Bryce.
Poliomyelitis (Infantile paralysis)	W. H. Frost.
The care of children under school age	D. Forsyth.
Flies and refuse heaps	W. H. Symons.
The necessity for food inspection	G. R. Mines.

L'Union Médicale du Canada, August, 1916:

L'expertise psychiatrique en matière penale dans la province de Québec et plus particulièrement dans le district judiciaire de Montréal. Etude statistique	G. Villeneuve.
Les hépatites infectieuses et toxiques	E. P. Benoit.
La syphilis au point de vue médical	C. F. Gauthier.
La syphilis au point du vue social	R. Pepin.

La Clinique, August, 1916:

Traitement de la fièvre typhoide par la refrigération continue de l'abdomen	L. F. Dube.

The Canadian Journal of Medicine and Surgery, September, 1916:

The treatment of diabetes mellitus	E. P. Joslin.

Dominion Medical Monthly, September, 1916:

The treatment of diabetes mellitus	E. P. Joslin.

La Clinique, September, 1916:

La neurasthénie de la cinquantaine	A. Leclercq.

The Canadian Practitioner and Review, October, 1916:

Blood transfusion: The author's technique. Report of eighty-five transfusions	L. J. Unger.
Medical problems involved in the classification, treatment and final disposition of invalided soldiers	F. W. Marlow.

The Canada Lancet, October, 1916:

Chronic cystic mastitis	Dean Lewis.
Eclampsia	J. Fleming Goodchild.

Medical Societies

ALBERTA MEDICAL ASSOCIATION*

THE eleventh annual meeting of the Alberta Medical Association took place in Edmonton, September 21st and 22nd. The local doctors almost without exception took an active interest in the meeting and the attendance from the province at large was very satisfactory considering the stress of these times and the distance many of the men had to travel. Thus, Calgary is two hundred miles from Edmonton, Medicine Hat is three hundred and eighty miles, Cardston is four hundred miles, and members came from these as well as other points, and some Alberta practitioners who practise five hundred miles apart shook hands at this meeting. There was a registration of seventy names and every session was well attended. A well-balanced programme of twenty-five papers had been arranged. All but two of these were presented and read, these two being on hand but crowded out by lack of time. Every paper and committee report was enlivened by ample, pertinent discussion. The variety and timeliness of the papers may be seen in the following list.

"Medical inspection of school children," Dr. J. D. Dunn, Medical Inspector of Schools, Edmonton; "Some observations on public health work," Dr. T. J. Norman, Provincial Medical Officer of Health; "Early diagnosis of mental deficiency," Dr. Fred W. Stockton, Calgary; "End results of various disabilities of returned soldiers," Captain E. Hobart Reed, M.D., Medical Officer of Ogden Convalescent Home; "Medical ethics and fees," Dr. C. W. Field, Registrar, College of Physicians and Surgeons of Alberta, Edmonton; "Cancer of the large intestine, pathology," Dr. D. G. Revell; "Diagnosis and treatment," Dr. E. W. Allin, Edmonton; "Dislocations of the spine," Dr. C. E. Smyth, Medicine Hat; "Certain abdominal lesions, with case reports," Dr. J. S. Wright, Edmonton; "Acidosis in surgery, with illustrative cases" (to appear in the "Annals of Surgery"), Dr. W. A. Lincoln, Calgary; "Personal experience in *x*-ray therapy," Dr. Geo. H. Malcolmson, Edmonton; "Blood pressure," Dr. T. B. Stevenson, Wetaskiwin; "Hay fever," Dr. F. W. Gershaw, Medicine Hat; "Medical treat-

*EDITOR'S NOTE.—We are indebted to Dr. D. G. Revell, secretary-treasurer of the Alberta Medical Association, for this interesting report of the recent annual meeting. A shorter account was published in our last issue.

ment of obstetric cases," Dr. H. C. Swartzlander, Oyen; "Eclampsia," Dr. A. E. Archer, Lamont; "Internal secretions," Dr. J. B. Collip, Department of Physiology, University of Alberta; "Newer views of ventilation," Dr. Alex. Fisher, Superintendent of Calgary General Hospital; "Embolism of superior mesenteric artery," Dr. A. Forin, Edmonton; "Mouth infection as a source of systemic disease," Dr. B. A. Murray, Edmonton; "Treatment of squint" Dr. R. Bruce Wells, Edmonton; "Circumcision," Dr. F. J. Folinsbee, Edmonton; "Medical reciprocity," Dr. John Park, Edmonton; "Monsters of defect and of excess," Dr. D. G. Revell, Department of Anatomy, University of Alberta; "Urethral catheterization," Dr. E. L. Garner, Edmonton; "Acute anterior poliomyelitis in an adult," Dr. A. A. Nicholls, Edmonton.

An attractive and valuable feature of the meeting was a number of exhibits, comprising many *x*-ray photos by Dr. Geo. H. Malcolmson, Edmonton; operation specimens, with sections, of cancer of the large intestine, by Drs. Allin and Revell; and museum specimens, with *x*-ray plates, of monsters of excess and of defect, by the Department of Anatomy of the University.

Cases were also presented as follows: Four patients operated on for cancer of the large bowel, by Dr. Edgar Allin, Edmonton; Two cases of new-growth (sarcoma and epithelioma), undergoing treatment by *x*-ray with very marked improvement, by Dr. Geo. H. Malcolmson, Edmonton; Acute anterior poliomyelitis in an adult, by Dr. A. A. Nicholls, Edmonton; Branchial cyst, by Dr. F. J. Folinsbee, Edmonton; also a specimen of dermoid cyst, by Dr. F. A. Nordbye, Camrose; and of chronic endocarditis, by Dr. A. Forin, Edmonton.

His Honour, the Lieutenant Governor, Dr. R. G. Brett, the retiring president, opened the first session, and after a short appropriate speech, installed the president-elect, Dr. T. H. Whitelaw, Medical Officer of Health of Edmonton, in the chair. The treasurer's report showed a small balance after meeting all expenditures and liabilities.

As a result of papers read and the discussions which these evoked, resolutions were adopted which aimed to give practical results. Thus, one resolution provided for a committee of eleven to carry on a propaganda of mental hygiene and of public health, for which work a grant is asked for from the funds of the College of Physicians and Surgeons of Alberta; this resolution also calls on the Government to create a separate department of public health; another resolution requests the Medical Council of Alberta to take

the necessary steps to establish medical reciprocity between Alberta and the General Medical Council of Great Britain as soon as possible. Others provided for the adoption of a code of ethics—that of the American Medical Association; for a tariff of medical and surgical fees in Alberta as a means of assistance in cases coming into the law courts; and finally the views of the medical men and the facts regarding the hospital situation in this province were set forth as follows:

"1. That we the Alberta Medical Association approve of the efforts being made for the extension of hospital accommodation in this province, and will be glad to coöperate in any efforts to secure and improve hospital accommodation in rural districts.

"2. The need of hospital accommodation is at present most acute in the country districts and we urge the establishment of cottage hospitals throughout the rural municipalities, the management of such hospitals to be left in the hands of a committee and to be made as largely self-supporting as possible.

"3. We believe that the hospital accommodation of the cities of Alberta is at present adequate for the needs of the present population of the cities. We also believe that the present system of management and rules of admission and conduct of patients is the best suited to give the best service to the whole community. We believe that no one in the cities suffers for want of such treatment because of its cost. It is our experience that there is no difficulty in obtaining any form of hospital treatment free of charge if the circumstances warrant it.

"4. This Association wishes to protest against certain misrepresentations regarding the management and service of the hospitals of this province. We are in a position to know that the present hospitals are rendering an efficient and valuable service to all classes of people and merit the hearty support of the community they serve."

During the year past the Association has lost Dr. H. G. MacKid, of Calgary, a former president both of the Alberta and of the Canadian Medical Associations, whose death has already been noted in the JOURNAL; Captain H. S. Monkman, Vegreville, of the 3rd C.M.R., killed in action; also Lieutenant Chas. Wilson, son of Mrs. H. C. Wilson and the late Dr. H. C. Wilson, of Edmonton, was killed in action. A resolution was adopted extending condolence to their families.

The social part of the meeting was not allowed to encroach on the real business, but facilitated and supplemented the latter.

Luncheon was provided by the local members each day and was conveniently served in the spacious and handsome dining hall of the university; and the opportunity was also taken to inspect the university buildings and equipment, including the residences, laboratories and the new teaching building which is unsurpassed in its kind in Canada.

Upon the evening of the first day the session, presided over by His Honour, Dr. R. G. Brett, was open to friends of the members. There were addresses by the chairman, by President Tory of the University, by Dr. Dyde, Principal of Robertson College, and Dr. T. H. Whitelaw gave his presidential address. A fitting conclusion to the convention was the banquet, Friday evening, at the Hotel MacDonald, given by the members of the Edmonton Academy of Medicine to the visiting members, and to local members of the C.A.M.C. on active service.

It was decided to meet in Calgary next year and the following executive was elected: president, Dr. W. A. Lincoln, F.R.C.S., Eng., Calgary; first vice-president, Dr. E. Allin, Edmonton; second vice-president, Dr. Geo. E. Learmonth, High River; secretary-treasurer, Dr. D. G. Revell, Department of Anatomy, University of Alberta; councillors: Drs. J. S McEachern, Calgary; L. S. MacKid, Calgary; R. B. Francis, Calgary; J. S. Wright, Edmonton; and F. W. Gershaw, Medicine Hat.

ACADEMY OF MEDICINE, TORONTO

THE stated meeting of the Academy of Medicine, Toronto, was held in the Mining Building of the University of Toronto on Tuesday, October 3rd, at 8:30 o'clock p.m. The guest of the evening was Professor A. J. Carlson, professor of physiology, University of Chicago, who addressed the Academy upon the subject: "Some recent contributions to the physiology and pathology of the stomach," illustrated by lantern slides.

Dr. Carlson did not feel himself a stranger in Toronto as he is associated with a number of Toronto graduates in the University of Chicago. Professor Carlson's experimental work on the stomach was made possible by finding a man who as a child had a stenosis of the œsophagus due to caustic potash and who had since been fed through a gastrostomy opening. A series of slides were shown demonstrating the muscular contractions of the empty stomach, secured by an inflated rubber balloon in the normal stomach and connected through a tube in the œsophagus to a tambour and trocar proper.

As digestion proceeds there is an increase in the vigour of the muscular contraction leading to an almost tonic condition. This develops with the emptying of the stomach and is synchronous with the sensation of hunger. There is no doubt but that the phenomenon of hunger is due to this increased "tonus" of the stomach and is not due to vagus or sympathetic control being present in the isolated stomach. It is present when the cerebrum is removed but not when the optic thalamus is destroyed.

Stimulation of the gastric mucosa relieves these contractions, swallowing saliva induced by chewing hard paraffin, for example, the swallowing of normal gastric juice, etc., while water has much less effect. Smoking a rather strong cigar was shown in one experiment to exhibit these "hunger" contractions. Massage of the abdomen acted similarly, as did the application of a tight belt.

The activity of nerve muscular mechanisms in general is lessened during sleep, while the contractions of the empty stomach are increased during sleep. All external stimuli so far investigated lessen these contractions, none increase them. All increase in contraction seems to come from the gastric mucosa itself as reflex through the optic thalamus. Hæmorrhage increases the hunger contractions as demonstrated by rapid withdrawal of blood from the carotid of a dog.

Cases showing clinically bulimia, polyphragia, when investigated, showed hypotonic contractions of the stomach, i.e., excessive "hunger" contraction. Pyloric stenosis induces hypotonic contractions.

In some experimental work on gastric and duodenal ulcer induced in laboratory animals the result showed that those in contact with normal acid gastric secretion healed with the same rapidity as those not so exposed, and quite as rapidly as those in the duodenum quite cut off from acid secretion and exposed only to the alkaline secretions found there.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE seventeenth regular meeting of the society was held Friday, June 2nd, 1916, Dr. F. A. L. Lockhart, President, in the Chair.

PATHOLOGICAL SPECIMENS: Series by Dr. J. W. Scott.

Dr. Scott exhibited a series of specimens of carcinoma of the penis which had been submitted to the Pathological Department of the General Hospital during the past fifteen months. The series

included four specimens and were of interest, first, because carcinoma of the penis is so rare, representing only about two per cent. of all cases; second, because each case illustrated a different etiological factor of importance, and third, the specimens showed the disease in the usual different situations—two of the prepuce, one of the glans and one into the urethral portion, this being the rarest form.

The first case is a clipping sent in by a physician outside the city. The patient, aged fifty-three, had noticed progressive thickening and induration of the penis for some time; he had an indurated, thick, ulcerating sore with a foul discharge. He applied to his physician for circumcision but suspecting malignancy a clipping was sent to the Pathological Department. It proved to be carcinoma but the patient refused operation.

The second case was a man aged forty, who had his penis crushed while lifting shelves. He was treated four or five days after the accident by moist dressings and did not return to hospital for two or three months when an area of induration was noticed. He again left after local treatment but returned five months later with the growth very much extended. He was operated on but it is too recent to say anything about recurrence.

The third specimen illustrates the condition attacking the beginning of the urethra. The patient, aged forty-nine, had stricture, and two years previously noticed a swelling in the situation of the urethra. It began to grow actively and two months later there was a sanguinous discharge. No history of syphilis. The specimen was sent in for diagnosis and one can easily recognize the condition of the growth; the tissue is friable, indurated, and the architecture of the entire urethra has been destroyed by the growth.

The fourth specimen is one of early carcinoma. The patient, aged sixty-six, had a history of chancre twenty-five years ago at site of present ulcer, which embraced the urinary meatus. It had been cauterized and healed nicely with some scarification. Twelve months ago softening of the scarification occurred and progressively enlarged; at operation the induration was about the size of a ten-cent piece. Previously a snipping sent in for examination proved it to be cancer.

The last specimen is that of a lung from a patient who died from pulmonary hæmoptosis and tuberculosis, recognized as a rare condition. The patient was a female, aged fifty-four; history negative, no night sweats, no cough, lost twenty-five pounds in six months; no gastro-intestinal disturbance. Three days ago spat up a pint of blood, remained quiet for twelve hours then returned two

days later, having early in the morning coughed up one and a half pints of blood; twenty-four hours later died after another excessive hæmorrhage. At autopsy the trachea, stomach and bronchi were full of blood, the mucous membrane of the stomach was simply blood stained with no evidence of ulceration. Both lungs were quite extensively involved with a tuberculous process and we were able to confirm the diagnosis of cavitation of the left apex, the cavity being about the size of a golf ball, quite smooth, and contained recent blood. By injecting one of the vessels leading to the upper lobe one could demonstrate easily the site of the hæmorrhage. The only other evidence of tuberculosis found was an acute tuberculous enteritis involving the lower part of the ileum.

Discussion: Dr. M. Lauterman: This excellent series of specimens of carcinoma of the penis which Dr. Scott has been good enough to bring before us is one of the most interesting I have seen. Dr. Scott has very rightly said that carcinoma of the penis represented about two per cent. of all cases of carcinoma. In these cases the outstanding feature had been injury, a stricture in one, a soft sore, which had been cauterized, in another; external injury, etc. I have had five cases in my experience, one case that of an Italian who had been treated for lues at one of our hospitals, but he had no lues as a careful history elicited in his own language proved; another case of bleeding from the urethra very much resembling one shown to-night with urethral discharge for a month, had been treated for urethritis but careful examination of the bleeding point showed it to be carcinoma. These cases illustrated the fact that every case of this kind coming under our notice should be very carefully examined and not immediately labelled as a case of lues.

Dr. W. F. Hamilton: I had a fatal case of pulmonary hæmorrhage due to tuberculosis similar to the one mentioned to-night and the only one I ever saw. A woman, aged forty-five, came in complaining of hæmorrhage intermittently for three or four days, large and copious. It was pulmonary and we located some signs in the left base. Another hæmorrhage occurred with finally collapse, and autopsy showed a cavity with smooth walls, an aneurysm and a vessel traversing its walls.

Dr. R. E. Powell: I was fortunate enough to have two of these cases of cancer of the penis in my service this spring. One had a direct history of trauma, the other chancre. I did a spirochætæ and Wassermann test in both, which were negative, and then took a snipping and found that it was carcinoma in each case. Both these cases bring up the question of treatment; both were fairly early, in one there was only the prepuce involved, the other the glans penis

well away from the urethra, and the question came up whether amputation or a partial operation was justified inasmuch as the glands were not involved. The man is in perfectly good shape six months after the operation In the second case there was involvement of the glands and while the prepuce alone was involved it was a question whether the penis should not have been entirely removed. I removed as many glands, including the crural group, as I could, but whether the infection had gone in deeper or not time will tell.

Dr. Lauterman: Dr. Powell's remarks on treatment recall another case of mine, a patient aged sixty-two, who came to me in 1897 with a ready-made diagnosis of carcinoma of the penis. I took a section which was examined by some of our best-known pathologists and pronounced epithelioma. He saw two of our leading surgeons who concurred in the diagnosis and suggested a radical operation. This the patient declined absolutely. The inguinal glands were enlarged on both sides and the left thigh was one and a half times its normal size with œdema. About this time I attended a clinic at the Hôtel Dieu given by Sir William Hingston and among other things he showed us a case of epithelioma of the face of twenty years' standing which he was treating with potassa fusæ. His emphatic manner and the statements he made about this impressed me so that I thought of this man who had declined to have an operation done and speaking to Sir William about it he advised me by all means to try it. I secured a stick of the potassa fusæ and applied it freely, put on a moist bichlor. dressing and in about twelve days the eschar came away and the wound healed up; in two weeks the œdema went down and the adenitis disappeared. The patient lived nine years, ultimately dying of pulmonary tuberculosis. I still have the specimen which has been examined by many pathologists who all agree that it was an epithelioma.

DEMONSTRATION: 1. *Improved urethral catheter*, by Dr. M. Lauterman.

My difficulties with urethral catheters have been so many that I will not enumerate them. In the first place the expense is an item of importance. Those of you who do this work realize that it is rarely possible to use a catheter more than two or three times and many of them only once, and again there is the difficulty of sterilizing these instruments after once being used and in this you will agree that boiling is the best method. After several visits to various manufacturers I decided to get a fuse wire with a bead fused at the end which I could insert into the finest rubber catheters to give it a body and make the catheter so much easier of insertion.

Once in the ureter all you have to do is very gently withdraw the wire which should come out easily and leave the rubber tube in the ureter. In this way you have a fine catheter in the ureter that does not cause any traumatism; it is soft and flexible and one can inject through it or urine will flow out equally easily. It may be objected that it will kink but so far I have had no such difficulty. One form has a closed end and the other an open end. I have found these especially useful in doing pyelographic work. The solution of thorium which I use in this work is a perfectly clear limpid fluid which flows through anything that water will go through. Another preparation for which I am indebted to Dr. Ed. Young of the pharmacological department of the Massachusetts General Hospital, who worked it out, is an argentide emulsion—an excellent preparation which gives a much better picture than collargol or argyrol.

2. *Urinary test for lues*, by Dr. Lauterman.

In 1907 I visited the laboratory at St. Lazare with Dr. Levy-Bing. This was shortly after Hoffman aand Schaudinn had published their first account of the spirochæta pallida. Levy-Bing, following a suggestion made by Hoffman, undertook to find a method of diagnosing syphilis by means of examining the urine, which ended in failure. The reagent he pinned his faith to was iodine. He thought there should be some combination that would influence the iodine in such a way that it would give a definite reaction as to syphilis. I forgot all about this work until recently, when my attention was called to the reports published by Dr. Carl Gray of Portland, Maine, who had been doing work with iodine that had apparently proved satisfactory. This test depends for its application on the fact that the microörganism causing lues produces certain changes in the metabolism of its host and this fact is taken advantage of in the various tests that have been suggested for the establishment of the diagnosis of lues. The reagents necessary are 1 per cent. solution of resublimed iodine in chemically pure chloroform and 1 per cent. solution of phosphoric acid in distilled water. The other essentials are that the urine to be examined should be freshly voided and should have a specific gravity above 1015; urine of a low specific gravity, such as is seen in nervous polyuria where a large quantity of water is used, gives a positive reaction in spite of the fact that there may be no lues present. Absence of sugar is absolutely essential, and the ingestion of beer or wine interferes with it. The presence of blood, albumin, bile, indican or pus, gonococci, colon bacilli, etc., do not interfere with the test. Its simplicity is an important point; it takes only a few

minutes and is comparatively inexpensive. Dr. Carl D. Gray has found it to be more reliable than the Wassermann reaction; it is equally useful at any period of the disease, being present in one of my own cases before I was able to get the spirochæte even with the dark stage illumination. This test is still in the experimental stage and I offer it to you as I know it.

In the specimens of urine presented here the first is from a girl nine years old with acquired extra-genital lues. The child gave a persistently negative Wassermann until she had her first dose of salvarsan. She is suffering from advanced lues, both her tibiæ are in a frightful state and clinically there is no doubt about the reaction. To 6 c.c. of the urine, which is acid with a specific gravity of about 1015, is added 1 c.c. of a 1 per cent. resublimed iodine in chemically pure chloroform and the mixture is shaken vigorously for two or three minutes. It is then allowed to stand for two or three minutes when the chloroform precipitates and you have a red colour if your reaction is positive. If it becomes clear after the addition of 1 c.c. of the phosphoric acid solution the reaction is negative, but if the colour still remains it is positive.

Another specimen of urine is from a man suffering from cerebral lues. The specific gravity of this specimen is 1022 with a small trace of sugar, Here the reaction is negative, but once the sugar is extracted from the urine it becomes positive.

The test seems to me of value on account of its simplicity, and the effects appear to be fairly constant. It offers a field for investigation to the clinical chemist that I think would well repay careful investigation.

CASE REPORTS:

1. Foreign body in tumour of abdominal wall. By Dr. C. K. P. Henry. (Published in this issue.)

2. Ectopic gestation with unusual complication. By Dr. John R. Fraser. (Published in this issue.)

DISCUSSION: Dr. W. S. Morrow: I am not sufficiently acquainted with this branch of medicine to do more than express my appreciation and general interest, but I would like to ask a question as to the three ounces of ether being instilled in this case.

Dr. W. W. Chipman: I would like to say that I have enjoyed the presentation of this rare case very much and would indicate again the extreme rarity of this condition; so far as I know there is no reported case of its kind in literature. As you know if the tubes are sufficiently damaged, they only have to be damaged to a certain extent to make this ectopic pregnancy possible, and as you know with a Neisser, tuberculous, or pyogenic infection, the tube is

so damaged that the ovum cannot get down nor the spermatozoa get up. In this case there was a tubo-ovarian mass and abscess in the right side and also the left tube beyond the ectopic pregnancy showed signs of a Neisser infection of an extreme degree. It was dilated, wall thickened, and its mucosa, certainly to the naked eye, showed signs of destructive change. Of course the inference is plain that this left tube must have remained sufficiently patent to allow the passage up of the spermatozoa. In the matter of etiology, the view that was taken at the discussion four years ago is simply the one that is being held to-day. I am inclined to believe that the congenital type, the cases of anaplasia, are really the more common of the two. I remember in that discussion I said 50 per cent. of the one and the same of the other, but I am now rather inclined to think that the congenital type is the more common. Since that time I have had two cases of women with no pelvic lesion, perfectly healthy, with two pregnancies and only two, the first in the one tube and the next in the other.

Dr. M. Lauterman: I am very glad to express my obligation to Dr. Fraser for having brought this case before us. I had the fortune to have a chat with him to-day and mentioned that Hæncke in his gynæcological diagnosis refers to the possibility of such a condition, and while I have never seen or even heard of one before it is gratifying to know that we are fortunate enough to have possible cases noted when they do occur. Like many of the other members of the society I recall with a great deal of pleasure Dr. Chipman's paper of four years ago on this subject and as far as I can recall it remains on record as a classical monograph in the English-speaking world. The outstanding feature of this case to-night is the importance of treating gonorrhœa in the male before it gets to the female causing these often disastrous conditions.

Dr. F. A. L. Lockhart: Dr. Fraser's case reminds me of one I had fourteen or fifteen years ago. She certainly had an ectopic on one side and an acute pyosalpinx on the other, but it was an unfortunate case. There is only one criticism I would offer and I think it was a little bit radical to remove the uterus. Personally I never like to do this unless the uterus itself is the seat of infection. My reason for this is that you open up a large area of loose areolar tissue which is exceedingly prone to take on septic infection. This is the reason I practically never remove it unless there is disease of the uterus itself. Where I want to secure sufficient drainage I make a posterior colpotomy and drain through the vagina.

Paper: The paper of the evening was delivered by Dr. D. D. MacTaggart on "Notes on Medical Jurisprudence: Wounds."